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UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPHS 381 AND 382 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

PIPES AND SMOKERS' ARTICLES

Paragraph 168:
Brier Root and Brier Wood

Paragraph 381:
Pipes and Smokers' Articles
Meerschaum, crude

Paragraph 382:
Hatters' Plush. (For treatment, see par. 314)

REVISED EDITION

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UNITED STATES TARIFF COMMISSION

Offices: Eighth and E Streets NW., Washington, D. C.

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this, industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act, reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and index," which contains—

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913 showing the paragraph of the act in which the article is provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and index," the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Guy G. George and Charles F. Yauch, of the Commission's staff, and of others.

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PIPES AND SMOKERS' ARTICLES.

SUMMARY.

The value of the products of the industry manufacturing pipes and smokers' articles, excluding cigarette paper, was $4,220,000 in 1914. There were 47 establishments reported in the industry with a capitalization of $3,232,000, which employed 2,354 wage earners. The manufactures of cigarette paper are included with the manufactures of paper and not with smokers' articles.

Of the 47 establishments reported in 1914, 20 were located in the State of New York, and the establishments in that State manufactured 63.7 per cent of the total value of products and employed 63.3 per cent of the total number of wage earners. Other States in the industry were Missouri, Illinois, Massachusetts, and New Jersey.

According to one of the large paper manufacturers, the present tariff rate on cigarette paper will make it possible to undertake the development of this branch of the industry, although scarcely none is made in the United States at the present time. On the other hand, the duty on clay pipes valued at 40 cents per gross or less is declared by manufacturers to be much too low, since labor costs have been much lower abroad than in this country.

Amber was first included in the dutiable list at the rate of $1 a pound by the act of 1913, and meerschaum was also placed on the dutiable list for the first time at the rate of 20 per cent ad valorem. Neither article is produced in the United States. Briar root was first placed on the dutiable list by the act of 1909 in the hope that a domestic substitute would be produced or used, but no such substitute has been found which is satisfactory.

The statistical tables indicate clearly that the competition furnished by imports has been quite keen. The ratio of imports to production in 1914 was 32.1 per cent. This figure, however, includes cigarette paper in imports, while in reality there was practically no domestic production of cigarette paper. The percentage of those imports which offered direct competition with domestic products would, therefore, be considerably lower, probably about 15 per cent for the year 1914.

Pipes and smokers' articles—Summary table.

Year.	Domestic production.	Imports for consumption.[1]	Ratio of imports to production.	Value (imports for consumption).	Amount of duty.	Equivalent ad valorem rate.
			Per cent.			*Per cent.*
1910	[2]$5,312,000	$1,109,184	20.8	$1,109,184	$643,393	58.01
1911		1,417,532		1,417,532	826,529	58.31
1912		1,409,658		1,409,658	818,501	58.06
1913		1,315,771		1,315,771	757,764	57.59
1914	4,220,000	1,355,491	32.1	1,355,491	705,960	52.08
1915		1,191,847		1,191,847	588,088	
1916		1,229,583		1,229,583	611,396	
1917		3,082,237		3,082,237	1,538,582	
1918		5,517,006		5,517,006	2,757,280	
1919		6,946,266		6,946,266	3,470,286	
1920		7,861,789		7,861,789	3,927,245	
1920[3]		5,397,508		5,397,508	2,695,582	

[1] Including cigarette books, covers, and papers.
[2] Census of 1909. Not including cigarette books, covers, and papers.
[3] Calendar year.

GENERAL INFORMATION.

1913 TARIFF PARAGRAPH.

381. Pipes and smokers' articles: Common tobacco pipes and pipe bowls made wholly of clay, 25 per cent ad valorem; other pipes and pipe bowls of whatever material composed, and all smokers' articles whatsoever, not specially provided for in this section, including cigarette books, cigarette-book covers, pouches for smoking or chewing tobacco, and cigarette paper in all forms, except cork paper, 50 per cent ad valorem; meerschaum, crude or unmanufactured, 20 per cent ad valorem.

DOMESTIC PRODUCTION.

The value of the products of the industry manufacturing "pipes and tobacco" (including cigarette and cigar holders) was $4,220,000 in 1914. The value in 1909 was $5,312,000. In 1914 there were 47 establishments reported, with a capitalization of $3,232,000 and employing 2,354 wage earners. The manufacture of cigarette paper is included with other manufactures of paper and not with this product.

Materials.—The chief material used in the construction of pipe bowls is briar wood or briar root, which is imported mainly from France and Italy. The supply of this material is decreasing and search is being made for a suitable substitute. Other woods are used extensively but are not considered a satisfactory substitute.

Clay and meerschaum are also used in the construction of pipes and pipe bowls. Meerschaum used in the manufacture of pipes, cigar and cigarette holders, and other smokers' articles comes principally from Asia Minor. It is a clayeylike mineral, white, soft, and light enough to float on water, known in mineralogy as sepiolite. It is a hydrous silicate of magnesium.

Pipestems are made of reeds, woods, hard rubber, or composition, as well as from many other materials. Mouthpieces for pipes and cigar and cigarette holders are also made from a variety of materials—reeds, woods, hard rubber, bakelite, celluloid, ivory, amber, and other materials.

Rice paper is used extensively for cigarettes.

A great variety of materials are used in the construction of pouches for tobacco, pipe cases, and other cases and accessories, chief among which are white pine, leather, rubber, plush or velvet for linings, metal fittings, and metal cases and holders.

Organization and methods of production.—This discussion does not include the manufacture of cigarette books, covers, and papers, which are included with the manufactures of paper. The figures given include pipe bowls and pipes of whatever material composed; also cigar and cigarette holders.

The number of establishments engaged in this industry has declined since 1899, when there were 98 reported. In other respects—capitalization, wage earners employed, and value of products—the industry increased from its beginning until 1909, but declined somewhat in 1914. In 1909 there were 62 establishments, capitalized at $3,528,000, employing 2,775 wage earners, and turning out products

valued at $5,312,000. In 1914 the number of establishments was 47, capitalized at $3,232,000, employing 2,354 wage earners, and turning out products valued at $4,220,000.

The industry is largely controlled by the corporate form of ownership with large capitalization, but the number of establishments owned by individuals is greater than the number under other forms of ownership, there being 25 owned by individuals, 16 by corporations, and 6 under some other form of ownership. One establishment employed 598, or 25.4 per cent of the total number of wage earners. Two other establishments employed 636, or 27.0 per cent of the total number, and 4 other establishments employed 563, or 23.9 per cent of the total number. From this it will be seen that in 1914, 7 establishments employed 1,797, or 76.3 per cent of the total number of wage earners.

The percentage of males over 16 years of age employed as wage earners in 1904 was 86.6 in 1909, 83.7 in 1914, 81.3. The percentage of females for the same census years was 11.6, 14.2, and 16.7. The number of wage earners under 16 for the same years was 1.8, 2.1, and 2. There has been an increase in the percentage of women employed, but female labor furnishes a comparatively small part of the total.

The value of products of corporations in 1914 amounted to $2,647,000, or considerably more than 50 per cent of the total for the entire industry. There were nine establishments with a capitalization between $100,000 and $1,000,000, and only one establishment with a capitalization over $1,000,000. These 10 establishments employed 1,997 of the 2,354 wage earners, and were credited with products valued at $3,632,000, or about six-sevenths of the total, in 1914.

The processes involved in the manufacture of pipe bowls of briar root, other woods, and meerschaum, are largely carried on with the aid of machinery, although less machine work is possible with meerschaum. A great deal of skill is required in certain of the final stages of manufacture, particularly in the case of meerschaum.

The manufacture of common clay pipes is a much simpler process, requiring less machine labor and less skilled hand labor. A complete enumeration of the processes, with costs of each, is found in a statement by the American Clay Pipe Works (Inc.), tariff hearings, Committee on Ways and Means, 1913, Volume V, pages 5731–5734. Fancy clay pipes require a number of hand processes, among which are molding, trimming, polishing, varnishing, and packing for shipment.

Geographical distribution.—New York is the leading State in the manufacture of pipes, 20 of the 47 establishments in 1914 being located in that State. New York employed 1,492, or 63.3 per cent of the total number of wage earners. The value of products of the industry in New York in 1914 was $2,689,000, or 63.7 of the total. Other States were Missouri, Illinois, Massachusetts, and New Jersey.

Domestic production, consumption, and exports.—There are no exports of the domestic products of this industry stated in the Statistics of Commerce and Navigation. This is no doubt due in part to the following reasons: (1) That the American manufacturer is practically entirely dependent upon imports of raw materials; (2) that there is no overproduction of pipes of desirable quality in this

country; and (3) that the cheaper pipes which are made from domestic woods or clay, as well as those made from the high-grade materials, can not be produced as cheaply in the United States as abroad.

The domestic industry grew gradually until 1909, when the value of the products of the industry reached a total of $5,312,000. The value in 1914 was $4,220,000 or considerably less than in 1909.

Imports amounted to 20.8 per cent of the value of domestic production in 1910 and 32.1 per cent of the value in 1914. However, imports for consumption in this case included cigarette books, covers, and papers, while the value of domestic products did not. In 1914 and later years the imports of cigarette books, covers, and papers grew out of all proportion to pipes and other smokers' articles but they did not exceed half of the total value of imports prior to 1914. Deducting the value of imports of cigarette books, covers, and papers would leave a figure more accurately comparable to domestic production, and the ratio would then be about 10 per cent and 15 per cent for the years 1910 and 1914, respectively.

It appears from these considerations that there is no overproduction of high-quality pipes. The decrease in the value of products from 1909 to 1914 may possibly be an indication that cigarettes are reducing the demand for pipes, but even with this consideration in mind, unless a satisfactory substitute for briar root is discovered, it is hardly probable that there will be an overproduction of high-grade pipes.

IMPORTS.

Prior to 1913 imports of pipes and smokers' articles were stated under one heading, and amounted to a little over $1,000,000 in value annually. The principal exporting countries were France, Austria-Hungary, United Kingdom, and Germany.

Since 1913 cigarette books, covers, and papers have been stated separately, and pipes and all other smokers' articles have been included in another class. The increase in imports of cigarette books, covers, and papers has been remarkable. In 1913 their value was $706,380, in 1916 their value was $1,247,799, in 1917, $3,893,653, and in 1920, $4,723,995. The highest was in 1918, $8,808,278. Practically all of this importation came from France.

The increased importation of cigarette paper was caused by the increased production of cigarettes, no doubt due to the demand caused by the war. The production of cigarettes in the United States has increased from about 17,000,000,000 in 1914 to 40,000,000,000 in 1919. The French have had a practical monopoly of the manufacture of cigarette paper. In the past there has not been sufficient incentive for American paper makers to enter the field. The paper is a difficult one to make; stock is expensive and not easily obtained; the volume of the business formerly was not large; foreign costs of manufacture were low; and the American manufacturer was not encouraged to undertake the development work required to carry on the manufacture of cigarette paper.

TARIFF HISTORY.

Pipes, pipe bowls, and all smokers' articles not specially provided for, including cigarette books, covers, and papers, were assessed at 50 per cent ad valorem by the act of 1894; pipes of clay valued

at not more than 50 cents per gross, at 10 per cent ad valorem; meerschaum crude or unmanufactured, free.

The act of 1897 raised the duty on pipes and pipe bowls not of clay, and other smokers' articles, including cigarette books, covers, and papers, to 60 per cent ad valorem. Clay pipes were divided by this act into common pipes valued at not more than 40 cents per gross, which were assessed at 15 cents per gross, while other clay pipes and bowls were assessed at 50 cents per gross and 25 per cent ad valorem. Meerschaum unmanufactured remained on the free list.

The act of 1909 made no change whatever with respect to pipes and smokers' articles. The act of 1913 eliminated all specific duties and made clay pipes dutiable at 25 per cent ad valorem; other pipes and smokers' articles of whatever material composed, including cigarette books, covers, and papers, were reduced from 60 per cent ad valorem to 50 per cent ad valorem; and meerschaum was made dutiable for the first time at 20 per cent ad valorem.

COMPETITIVE CONDITIONS AND TARIFF CONSIDERATIONS.

Correspondence with manufacturers of pipes and smokers' articles has not yielded much information with reference to foreign competition under the present rates, on account of the war. Post-war conditions can not be predicted at this time. Under the present rate it is stated by a large paper manufacturer that it will be possible to undertake the manufacture of cigarette paper.

In the Tariff Hearings of 1908–9 before the Committee on Ways and Means, pp. 7305–7311, it was said that the existing duties at that time were fair, except on clay pipes costing 40 cents or less per gross, on which it was claimed the duty should not be below 25 cents per gross. Again in 1913, Tariff Hearings, Committee on Ways and Means, 1913, pp. 5731–5734, an argument was presented along this same line, supported by a detailed comparison of the costs of production in New York and Scotland.

The paragraph can be reworded so as to include all pipes and smokers' articles or parts of pipes and smokers' articles of whatever material composed, in finished or partly finished condition. Such a revision would prevent the evasion of the duty which is now possible.

The act of 1913 lowered the duty on pipes and smokers' articles, excepting clay pipes, from 60 per cent ad valorem to 50 per cent ad valorem. At the same time this act assessed a duty on two raw materials on which a duty had not been assessed, amber and meerschaum.

All of the amber used in the United States comes from the Baltic. It is obtained from mines in Samland, East Prussia. Imports of amber were first assessed by the act of 1913 at the rate of $1 a pound.

Meerschaum is mined in Asia Minor, and does not compete directly with any domestic product. It was first placed on the dutiable list by the act of 1913 at the rate of 20 per cent ad valorem.

An American manufacturer writes concerning parts of pipes:

> The present phraseology has made it possible for importers in our line to bring into this country completed pipe bowls, with the exception of the draft hole, and classified them as "manufactures of wood," under paragraph No. 176. The argument of the importer is to the effect that the article only becomes a pipe bowl when entirely completed. In other words, the absence of the draft hole reduces

the classification of duty from 50 to 15 per cent. The boring of the draft hole is the most trivial of all the operations, and therefore the least costly. * * * Let us explain that the importation of these bowls at 15 per cent has only been the practice within the last couple of years, and only in minor quantities on account of the war. The point we make to-day is to avoid the seriousness of this condition affecting us when times are again normal.

Pipes and smokers' articles [1]*—Production in United States.*

[From Federal census.]

States.	1899	1904	1909	1914
United States	$2,472,000	$2,634,000	$5,312,000	$4,220,000
Illinois				155,000
Massachusetts				56,000
Missouri				433,000
New York				2,660,000
All other				865,000
Total				4,220,000

[1] Including many varieties of smokers' pipes and fittings; also cigar and cigarette holders; but not including cigarette papers, books, and covers.

Pipes and smokers' articles [1]*—Imports by countries (fiscal years).*

Imported from—	1910	1911	1912
Austria-Hungary	$328,021	$365,074	$397,704
France	468,672	510,500	584,747
Germany	91,485	165,102	189,097
Spain	17,490	23,649	22,954
United Kingdom	200,060	341,620	305,855
All other	34,722	39,057	27,613
Total	1,140,750	1,445,002	1,478,969

[1] Stated separately after 1912. Cigarette books, covers, and papers are included.

Cigarette books, covers, and papers [1]*—Imports by countries.*

FISCAL YEARS.

Imported from	1913	1914	1915	1916	1917	1918
Austria-Hungary	$120,318	$187,625	$135,235	$460	$245	
France	554,589	668,424	784,039	1,146,523	3,737,635	$8,719,190
Italy	403	823	38,949	18,233	48,953	32,595
Spain	20,787	10,498	43,447	15,599	31,190	27,429
United Kingdom	29	442	11,515	43,879	62,276	2,782
All other	10,704	19,559	8,298	23,105	13,354	27,282
Total	706,830	907,371	1,021,483	1,247,799	3,893,653	8,808,278

CALENDAR YEARS.

Imported from	1918	1919	1920
Austria-Hungary		$4,795	
France	$8,628,709	5,857,972	
Germany	132,324	169,713	
United Kingdom	3,913	130	
Japan	16,153		
All other	48,928	91,449	
Total	8,781,090	6,124,059	$4,723,995

[1] Included with "Pipes and smokers' articles" prior to 1913.

Pipes and all other smokers' articles [1]*—Imports by countries (fiscal years).*

Imported from—	1913	1914	1915	1916	1917	1918
Austria-Hungary	$224,932	$224,908	$96,309	$7,526	$1,195	.....
France	35,764	34,840	37,796	6,649	8,527	$348,439
Germany	117,316	99,460	40,795	3,271	259	.....
United Kingdom	222,869	181,914	142,675	85,428	82,884	79,986
Japan	9,686	6,890	4,949	7,366	19,582	21,168
All other	14,797	17,488	10,390	13,123	5,960	10,654
Total	625,364	565,500	332,914	123,363	118,407	460,247

[1] Included with "Pipes and smokers' articles" prior to 1913.

Pipes and all other smokers' articles [1] *(dutiable)—Imports by countries (calendar years).*

Imported from—	1918	1919	1920
Austria-Hungary	.....	$3,430	.....
France	$93,832	28,253	.....
Germany	.....	508	.....
United Kingdom	71,335	109,650	.....
Japan	16,891	17,282	.....
All other	10,276	32,376	.....
Total	192,334	191,999	$719,622

[1] Included with "Pipes and smokers' articles" prior to 1913.

Pipes and smokers' articles (total)[1]*—Imports for consumption—Revenue.*

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1907	Various		$1,043,361	$600,705	.....	57.58
1908	....do		1,052,277	607,984	.....	57.78
1909	....do		936,136	538,511	.....	59.52
1910	....do		1,109,184	643,393	.....	58.01
1911	....do		1,417,532	826,529	.....	58.31
1912	....do		1,409,658	818,501	.....	58.06
1913	....do		1,315,771	757,764	.....	57.59
1914	....do		1,355,491	705,960	.....	52.08
1915	....do		1,191,847	588,088	.....	49.34
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1917	....do		3,082,237	1,538,582	.....	49.92
1918	....do		5,517,006	2,757,280	.....	49.98
1919	....do		6,946,266	3,470,286	.....	49.95
1920	....do		7,861,789	3,927,245	.....	49.95
1920 [2]	....do		5,397,508	2,695,582	.....	49.94
1921 [3]	....do		2,379,756	1,187,844	.....	49.96

[1] Including cigarette books, covers, and papers.
[2] Calendar year.
[3] Six months ended June 30, 1921.

Cigarette books, cigarette-book covers, and cigarette paper in all forms, except cork paper—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1910	60 per cent		$76,478	$45,886	.....	60.00
1911	....do		570,439	342,263	.....	60.00
1912	....do		600,972	360,583	.....	60.00
1913	....do		679,147	407,488	.....	60.00
1914	....do		208,932	125,359	.....	60.00
1914	50 per cent		586,497	293,248	.....	50.00
1915	....do		849,217	424,608	.....	50.00
1916	....do		1,110,251	555,125	.....	50.00
1917	....do		2,962,015	1,481,007	.....	50.00
1918	....do		5,285,529	2,642,764	.....	50.00
1918 [1]	....do		6,721,945	3,360,972	.....	50.00
1919 [1]	....do		7,721,695	3,860,847	.....	50.00
1920 [1]	....do		4,692,064	2,346,022	.....	50.00
1921 [2]	....do		2,054,617	1,027,308	.....	50.00

[1] Calendar year. [2] Six months ended June 30, 1921.

Common tobacco pipes and pipe bowls of clay, valued at not more than 40 cents per gross—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Gross.				*Per cent.*
1908	15 cents per gross	117,789	$32,917	$17,668	$0.279	53.70
1909	do	120,149	33,520	18,022	.279	53.76
1910	do	116,925	32,769	17,538	.280	53.52
1911	do	108,805	30,174	16,320	.277	54.09
1912	do	102,550	29,556	15,382	.288	52.05
1913	do	88,958	25,443	13,343	.286	52.41
1914	do	12,364	3,580	1,854	.289	51.80

ALL OTHER.

		Gross.				*Per cent.*
1908	50 cents per gross plus 25 per cent.	9,549	$20,069	$9,791	$2.08	48.80
1909	do	7,109	13,697	6,978	1.93	50.95
1910	do	8,106	16,353	8,141	2.02	49.79
1911	do	9,105	28,306	11,629	3.11	41.08
1912	do	10,257	37,783	14,574	3.68	38.57
1913	do	11,776	36,304	14,964	3.08	41.22
1914	do	1,290	3,921	1,625	3.04	41.45

Common tobacco pipes and pipe bowls of clay—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1914	25 per cent		$28,175	$7,043		25.00
1915	do		31,334	7,833		25.00
1916	do		13,176	3,294		25.00
1917	do		10,064	2,516		25.00
1918	do		4,810	1,202		25.00
1918 [1]	do		4,716	1,179		25.00
1919 [1]	do		15,852	3,963		25.00
1920 [1]	do		12,091	3,022		25.00
1921 [2]	do		8,131	2,032		25.00

[1] Calendar year. [2] Six months ended June 30, 1921.

Pipes, pipe bowls of other material, and all smokers' articles, n. s. p. f., and pouches for smoking or chewing tobacco [1]—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1908	60 per cent		$966,823	$580,093		60.00
1909	do		855,809	513,485		60.00
1910	do		953,016	571,809		60.00
1911	do		760,449	456,269		60.00
1912	do		713,266	427,960		60.00
1913	do		536,565	321,939		60.00
1914	do		146,352	87,811		60.00
	50 per cent		378,034	189,017		50.00
1915	do		311,275	155,637		50.00
1916	do		105,142	52,571		50.00
1917	do		109,949	54,974		50.00
1918	do		226,467	113,233		50.00
1918 [2]	do		132,721	66,350		50.00
1919 [2]	do		170,089	85,044		50.00
1920 [2]	do		693,353	346,537		50.00
1921 [3]	do		317,008	158,504		50.00

[1] Act of 1897 includes "Cigarette books, cigarette book covers, and cigarette paper in all forms."
[2] Calendar year.
[3] Six months ended June 30, 1921.

Pipes and smokers' articles—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	476	Pipes, pipe bowls, and all smokers' articles whatsoever, not specially enumerated or provided for in this act.	70 per cent ad valorem.
		All common pipes of clay	35 per cent ad valorem.
1883	741	Meerschaum, crude or raw	(Free.)
1890	468	Pipes, pipe bowls, of all materials, and all smokers' articles whatsoever, not specially provided for in this act, including cigarette books, cigarette-book covers, pouches for smoking or chewing tobacco, and cigarette paper in all forms.	70 per cent ad valorem.
		All common tobacco pipes of clay	15 cents per gross.
1890	649	Meerschaum, crude or unmanufactured	(Free.)
1894	359	Pipes, pipe bowls, of all materials, and all smokers' articles whatsoever, not specially provided for in this act, including cigarette books, cigarette-book covers, pouches for smoking or chewing tobacco, and cigarette paper in all forms.	50 per cent ad valorem.
		All common tobacco pipes and pipe bowls made wholly of clay, valued at not more than 50 cents per gross.	10 per cent ad valorem.
1894	553	Meerschaum, crude or unmanufactured	(Free.)
1897	459	Pipes and smokers' articles: Common tobacco pipes and pipe bowls made wholly of clay, valued at not more than 40 cents per gross.	15 cents per gross.
		Other tobacco pipes and pipe bowls of clay	50 cents per gross and 25 per cent ad valorem.
		Other pipes and pipe bowls of whatever material composed, and all smokers' articles whatsoever, not specially provided for in this act, including cigarette books, cigarette-book covers, pouches for smoking or chewing tobacco, and cigarette paper in all forms.	60 per cent ad valorem.
1897	613	Meerschaum, crude or unmanufactured	(Free.)
1909	475	Pipes and smokers' articles: Common tobacco pipes and pipe bowls made wholly of clay, valued at not more than 40 cents per gross.	15 cents per gross.
		Other tobacco pipes and pipe bowls of clay	50 cents per gross and 25 per cent ad valorem.
		Other pipes and pipe bowls of whatever material composed, and all smokers' articles whatsoever, not specially provided for in this section, including cigarette books, cigarette-book covers, pouches for smoking or chewing tobacco, and cigarette paper in all forms.	60 per cent ad valorem.
1909	625	Meerschaum, crude or unmanufactured	(Free.)
1913	381	Pipes and smokers' articles: Common tobacco pipes and pipe bowls made wholly of clay.	25 per cent ad valorem.
		Other pipes and pipe bowls of whatever material composed, and all smokers' articles whatsoever, not specially provided for in this section, including cigarette books, cigarette-book covers, pouches for smoking or chewing tobacco, and cigarette paper in all forms, except cork paper.	50 per cent ad valorem.
		Meerschaum, crude or unmanufactured	20 per cent ad valorem.

Court and Treasury Decisions.

"All smokers' articles whatsoever" is a comprehensive term, the use of the words "all" and "whatsoever" leaving little doubt as to the intention of Congress, and the intensified form of the phrase as a whole manifests a purpose to reach out into all branches of trade and commerce and to gather within the provision everything used chiefly by smokers in that pursuit and for that purpose, irrespective of other provisions within which they may be included. (Knauth *v.* United States, 1 Ct. Cust. Appls., 334, of 1911; Bush *v.* United States, 10 Ct. Cust. Appls., T. D. 38402, of 1920.) Unfinished parts, however, are not within the paragraph. In a case under the act of 1894 unfinished meerschaum pipe bowls were held dutiable as articles composed of earthy or mineral substance (G. A. 3405, T. D. 16977, of 1896). In a case under the act of 1897 lengths of polished hard rubber intended to be divided and made into two mouthpieces for pipes were held dutiable as manufacture of rubber. (G. A. 4590, T. D. 21719, of

1899.) And in a case under the act of 1913 wood roughly carved into the shape or form of a pipe bowl, but not sufficiently advanced in manufacture to answer the purpose of a pipe bowl, was held dutiable as a manufacture of wood. (G. A. 7771, T. D. 35697, of 1915.) On the other hand, mouthpieces for pipes finished but not designed to be used in any particular pipe or pipestem being made for insertion in any pipe or stem so constructed as to receive them were held to come within the provision of "all smokers' articles whatsoever" in act of 1909. (United States *v.* Hanover Vulcanite Co., 4 Ct. Cust. Appls., 503, of 1913.) The doctrine of ejusdem generis has no application in construing this provision. (Steinhardt *v.* United States, 126 Fed. 443, of 1903.)

Paragraph 381 of the act of 1913 has been held to include the following articles:

A smoker's table with 12 ash trays for same (Abstract 37609, of 1915);

Decorated earthenware in the shape of humidors, cigar trays, ash receivers, etc. (Abstract 37798, of 1915).

Cigarette machines consisting of a tubular piece of brass about one-fourth inch in diameter, split in half and hinged and capable of being used to assist the smoker in rolling a cigarette (Abstract 40097, of 1916).

Lithographed tin boxes about 6 inches square and 1 inch deep, hinged tops, used as containers for cigarettes, imported empty (Abstract 39627, of 1916)

Amber cigar and cigarette holders complete and capable of being used as a cigar or cigarette holder, but having a slight depression evidently made for a gold band not necessary to its use and apparently serving no other purpose than ornamentation (Abstract 40001, of 1916).

So-called cigarette holders made of glass having a metal reed were held dutiable according to the component material of chief value, and not as smokers' articles nor as toys. (T. D. 34050, of 1914.)

Glazed clay pipes (T. D. 35963, of 1915) and clay pipe bowls (Abstract 36337, T. D. 34742, of 1914).

Bamboo pipestems 5 inches in length, one end cut off square just back of a joint, thus forming a mouthpiece, and the other end tapered to fit into the pipe. (Bush *v.* United States, 10 Ct. Cust. Appls., T. D. 38402, of 1920.)

Pipe bowls of the commonest variety were held properly dutiable at 25 per cent under the first clause of paragraph 381 and not at 50 per cent under the second clause. (Abstract 44013.)

Cigar lighters were held classible as smokers' articles under the act of 1909 (Bernhardt *v.* United States, 4 Ct. Cust. Appls., 36, of 1913), but pocket cigar lighters were held to be dutiable under paragraph 356 of the act of 1913 as articles designed to be carried on the person, by virtue of the provision in paragraph 386 imposing the higher of two rates applicable to unenumerated articles. (Bischoff *v.* United States, 7 Ct. Cust. Appls., 138, of 1916.)

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turers as agents of American and English houses have secured control of the output. An American consul in a report on the supply of meerschaum in Austria stated that up to the present time (1907) there had been no serious complaint regarding the lack of crude meerschaum, though the effect of such a scarcity may be seriously felt later. In 1911 the American consul at Prague stated "the valuable material from which meerschaum pipes are made is continually getting scarcer, and the large industry which has flourished in Vienna, Budapest, Nuremberg, Paris, and in the Thuringian town of Ruhla seems endangered."

IMITATIONS.

A cheap artificial imitation of meerschaum is made from gypsum, hardened, treated with stearic acid or paraffin, polished and colored by a solution of gamboge and dragon's blood. Imitation meerschaum is said to be manufactured in France from potatoes.

IMPORTS.

Almost the entire output of meerschaum of Asia Minor is sent to Vienna and thence distributed to various European countries and to the United States. Very little, if any, is imported directly into the United States from Asia Minor. Practically all of the meerschaum imported into the United States comes from Austria-Hungary. Some comes from Germany and some from Turkey in Europe. In view of the fact that the United States is considered the best purchaser of the Asia Minor product, it seems rather surprising that purchases should not be made directly on the spot or through Constantinople instead of through Vienna. From 1910 to 1915, inclusive, the value of imports from Austria-Hungary was in no year less than 85 per cent of the total value imported. In 1910 all of the meerschaum imported into the United States came entirely from Austria-Hungary; imports for this year were valued at $227,314. No general imports are shown for the years 1916, 1917, and 1919. In 1918 imports amounted to only $4 and in 1920 to $52,274.

TARIFF HISTORY.

Before the act of 1913 meerschaum in its crude or unmanufactured state was admitted into the United States free of duty. The act of 1913 imposes a duty of 20 per cent ad valorem.

TARIFF CONSIDERATIONS.

Manufactures of meerschaum, when not properly classifiable under paragraph 381 relating to pipes and smokers' articles, are dutiable under paragraph 81 as articles composed of earthy or mineral substances. Such articles bear the same rate of duty as crude meerschaum.

Meerschaum, crude or unmanufactured—Imports by countries (fiscal years).

Imported from—	1910	1911	1912	1913	1914	1915
Austria-Hungary	$227,314	$168,045	$167,455	$119,059	$99,993	$16,880
Germany		12,556	2,035	6,262	943	83
Turkey in Europe			23,547		1,854	1,993
All other		86		55		
Total	227,314	180,687	193,037	125,376	102,790	18,956

Total imports, by countries, of meerschaum, crude or unmanufactured, in 1918 amounted to $4. In 1920, 13,386 pounds, valued at $52,274.

Meerschaum, crude or unmanufactured—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1907	Free		$134,624			
1908	do		158,746			
1909	do		173,145			
1910	do		207,670			
1911	do		180,637			
1912	do		197,646			
1913	do		119,457			
1914	do		92,274			
1914	20 per cent ad valorem.		10,529	$2,105		20
1915	do		18,956	3,791		20
1916	do					20
1917	do		671	134		20
1918	do		707	141		20
1920	do	3,331	20,199	4,040	$6.064	20
1920[1]	do	5,385	27,078	5,415	5,028	20
1921[2]	do	845	2,991	598		20

[1] Calendar year. [2] 6 months ending June 30, 1921.

Meerschaum, crude or unmanufactured—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rate of duty, specific and ad valorem.
1883	741	Meerschaum, crude or raw	Free.
1890	649	Meerschaum, crude or unmanufactured	Do.
1894	553	do	Do.
1897	613	do	Do.
1909	625	do	Do.
1913	381	* * * meerschaum, crude or unmanufactured	20 per cent ad valorem.

HATTERS' PLUSH.

(Par. 382. For treatment see par. 314.)

BRIAR ROOT OR BRIAR WOOD.

General Information.

TARIFF ACT OF 1913.

Paragraph 168 of the tariff act of 1913 reads: "Briar root or briar wood, ivy or laurel root, and similar woods, unmanufactured, or not further advanced than cut into blocks, suitable for the articles into which they are intended to be converted, 10 per cent ad valorem."

DESCRIPTION.

Briar root or briar wood is an imported wood derived from the white or tree heath (Erica Arborea) which flourishes in Italy and Algeria, and grows in small quantities also in Spain, France and Greece. The wood is obtained from the burl where the trunk expands, at the base and is the only part of the tree used. The ivy and laurel woods are of domestic growth, found chiefly in North Carolina. They are somewhat similar in appearance and quality to the briar root, but are much softer and impractical for the manufacture of pipes.

USES.

The only use or at least the only important use of briar wood is in the manufacture of tobacco pipes.

SUBSTITUTES.

Any substance used in making pipes, such as clay or meerschaum, may be regarded as a substitute. Attempts have been made to use the domestic ivy and laurel woods in place of the imported briar wood but these substitutes have not been found satisfactory by manufacturers. Other domestic woods, which are used as substitutes, are apple (for cheaper grades), manzanita, wild lilac, red gum, and birch. Ebony, an imported wood, is also used.

IMPORTS.

Importations since 1910 range between two and five hundred thousand dollars in value. The chief sources of supply are France, Italy, and French Africa. Imports are shown in more detail by the following table.

PRICES.

Prices since 1910 for blocks of the principal size are quoted by a leading manufacturer as follows: 1910, $4; 1912, $4; 1914, $6; 1916, $7 to $12; 1918, $16; 1919, $16; 1920, $16 for the first six months, later 10 per cent reduction. Quotations are per gross.

TARIFF HISTORY.

Briar wood was admitted free of duty before the act of 1909. In that year it was subjected to a 15 per cent ad valorem duty, which was reduced to 10 per cent in 1913. In the hearings preceding the act of 1909 petitions were made for a duty for the purpose of developing the laurel and ivy root industry in North Carolina, Tennessee, and Virginia.

COMPETITIVE CONDITIONS.

Although briar wood has been on the dutiable list since 1909, the domestic industry has not been developed. The difficulty is not one of comparative costs of production but of quality. Pipe manufacturers claim that the domestic woods are not suitable for the manufacture of smoking pipes. The wood is too soft and will not stand the heat of the burning tobacco.

Briar root or briar wood and ivy or laurel root—Imports by countries.

FISCAL YEARS.

Imported from—	1910	1911	1912	Imported from—	1913	1914	1915
France	[1] $45,203 [2] 176,248	$118,488	$133,189	France	$132,721	$148,611	$172,213
Italy	[1] 5,201 [2] 78,065	81,592	157,789	Italy	134,490	39,938	91,615
England	5,295	278	2	England			2
French Africa	[1] 35,347 [2] 95,859	120,702	66,237	Cuba	3,818		
All other	129		894	French Africa	39,732	50,726	69,598
Total	[1] 85,751 [2] 355,596	321,060	358,111	All other	2,428	2,218	1,124
				Total	313,189	241,493	334,552

Imported from—	1916	1917	1918	Imported from—	1916	1917	1918
France	$160,683	$214,749	$158,612	Morocco	$1,523		
Italy	236,419	346,661	262,839	All other	108	$4,464	$2,476
England		2,685	6,138				
Cuba		24		Total	457,537	589,607	555,201
French Africa	58,804	21,024	125,136				

CALENDAR YEARS.

Imported from—	1918	1919	1920	Imported from—	1918	1919	1920
France	$292,010	$591,140		French Africa	$136,223	$270,293	
Italy	396,432	425,803		Hongkong	2,156		
England	20			Japan	101		
Canada	23			All other		595	
Costa Rica	1,206						
China	3,200			Total	831,371	1,287,831	1,005,810

[1] July 1–Aug. 5, 1909, when free of duty. [2] Period on and after Aug. 6, 1909 (dutiable).

Briar root and similar wood, unmanufactured, or not further advanced than cut into blocks—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1910	Free [1]		$85,751			
	15 per cent		359,703	$53,955		15
1911	do		310,974	46,646		15
1912	do		366,522	54,978		15
1913	do		312,051	46,807		15
1914	15 per cent and 10 per cent. [2]		250,385	27,666		15 10
1915	10 per cent		306,892	30,689		10
1916	do		486,019	48,601		10
1917	do		585,930	58,593		10
1918	do		552,322	55,232		10
1918 [3]	do		825,695	82,569		10
1919 [3]	do		1,155,873	115,587		10
1920 [3]	do		982,113	98,211		10

[1] July 1 to Aug. 5, 1909, under act of 1897.
[2] 15 per cent old law, July 1 to Oct. 3, 1913. New law Oct. 4, 1913, to June 30, 1914.
[3] Calendar year.

Briar wood—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1913	168	Briar root or briar wood, ivy or laurel root, and similar wood unmanufactured, or not further advanced than cut into blocks suitable for the articles into which they are intended to be converted.	10 per cent ad valorem.
1909	202	do	15 per cent ad valorem.
1897	700	Briar root or briar wood and similar wood unmanufactured, or not further advanced than cut into blocks suitable for the articles into which they are intended to be converted.	Free.
1894	684	do	Do.
1890	756	do	Do.

COURT AND TREASURY DECISIONS.

Briar root or briar wood has been provided for by name in the last five tariff acts.

In a decision of 1877 under the Revised Statutes blocks of briar wood roughly sawed into a form from which smokers' pipes are manufactured were held to be dutiable as wood unmanufactured and not as wood manufactured.—Dept. Order, T. D. 3411. The question whether these blocks were of cabinet wood was not raised.

The matter came up again under the act of 1883. The evidence showed that the importation consisted of briar-wood blocks of various sizes and forms such as were used by manufacturers of pipes, pipe bowls, and cigar holders. The evidence also showed that briar wood was extensively used in the arts and in the construction of the finest cabinet work because of its variegated appearance and its hardness and capacity for being carved and highly polished.

The department held the blocks exempt from duty as cabinet wood unmanufactured, notwithstanding almost exclusive use in the manufacture of smokers' articles.—Dept. Order, T. D. 7366. This is the case referred to in the tariff hearings of 1890 at page 1019.

Blocks of wood cut to size and prepared for engravers' use for making wood type, classified under paragraph 215 of the act of 1909, were held dutiable under paragraph 202. (Abstract 32937, T. D. 33594, of 1913.)

UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPHS 377, 378, 379, and 380 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

PHOTOGRAPHIC GOODS

Paragraph 377:
Peat Moss. (For treatment, see par. 370.)

Paragraph 378:
Pencils. (For treatment, see par. 370.)

Paragraph 379:
Pencil Leads. (For treatment, see par. 370.)

Paragraph 380:
Photographic Goods.

Paragraph 576:
Films, sensitized but not exposed.

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this, industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act, reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and index" the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Guy G. George, of the Commission's staff, and of others.

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PEAT MOSS. (PAR. 377.)

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PEAT MOSS.

[Par. 377. For treatment see par. 370.]

PENCILS AND PENCIL LEADS.

[Pars. 378 and 379. For treatment see par. 370.]

PHOTOGRAPHIC GOODS.

SUMMARY.

The photographic goods industry was credited with 146 establishments in 1914, capitalized at $36,388,000, employing 8,674 wage earners, and turning out products valued at a total of $39,041,000. These figures include articles not mentioned in tariff paragraphs 380 and 576, but which properly belong in any discussion dealing with the items enumerated in those paragraphs; in fact, they can not be separated from the available data.

New York is the leading State in the production of photographic goods, 59 of the 146 establishments reported in 1914 being located in that State. The establishments in New York employed 4,762 of the wage earners and turned out products valued at $35,175,000, which was nearly seven-eighths of the total. Other States in the industry were Illinois, Missouri, Massachusetts, Ohio, Pennsylvania, New Jersey, and California.

There seems to be little or no serious foreign competition, which may be largely due to the fact that one large American firm not only completely dominates the situation in the United States but practically dominates the business in the whole world. The quality of the American product is generally admitted to be the equal if not the superior of all others. The American producer has been the pioneer and the leader in the production of kodaks, films, and motion-picture films and apparatus.

Exports of photographic goods reached their highest point with a total of more than $25,000,000 in 1920 calendar year. Imports for consumption reached their height in the same year, with a total of $5,289,612.

The effect of the lower rates of the act of 1913 had the war not occurred can not be accurately predicted, but taking the situation as it exists to-day foreign competition is not serious and does not threaten to be so in the immediate future.

Film scrap, made from film of American manufacture, is now imported for the purpose of recovering the constituent elements, and is assessed at 10 per cent ad valorem under paragraph 384, as waste not specifically provided for. However, foreign-made film, sensitized but not exposed or developed, is free of duty, paragraph 576. It should also be noted that paragraph 404 contains a provision relating to the return of plates or films of American manufacture, damaged or worn out, and fit only for the recovery of the constituent materials.

Photographic goods—Summary table.

Year.	Domestic production.	Imports for consumption.[1]	Domestic exports.[2]	Ratio to production.		Value (imports for consumption.)[4]	Amount of duty.	Equivalent ad valorem rate.
				Imports.	Exports.			
				Per cent.	*Per cent.*			*Per cent.*
1910	$22,562,000	$1,185,909	$4,765,155	5.2	21.1	$1,185,909	$292,532	24.67
1911	.....	1,346,420	7,142,603	.....	.....	1,346,420	340,467	25.29
1912	.....	1,170,588	9,445,446	.....	.....	1,170,138	300,343	25.66
1913	.....	1,635,195	9,137,287	.....	.....	1,633,283	423,399	25.95
1914	39,041,000	2,913,293	9,431,800	7.4	21.9	1,926,117	363,207	18.86
1915	.....	1,980,472	8,276,291	.....	.....	973,439	189,325	19.45
1916	.....	1,420,902	15,986,066	.....	.....	644,636	111,104	17.23
1917	.....	1,395,345	14,322,188	.....	.....	700,524	78,981	10.25
1918	.....	1,323,627	12,290,317	.....	.....	381,531	61,781	16.19
1919	.....	1,566,451	[3] 12,328,939	.....	.....	458,796	34,135	7.44
1920	.....	2,930,602	[3] 20,648,562	.....	.....	784,091	89,549	11.42
1920[5]	.....	5,289,612	25,431,652	.....	.....	1,229,745	155,456	11.60

[1] Includes both "free" and "dutiable."
[2] Includes all exports of photographic goods.
[3] Export figures are for calendar years 1918 and 1919.
[4] "Dutiable" imports only.
[5] Calendar year.

General Information.

1913 TARIFF PARAGRAPHS.

PAR. 380. Photographic cameras, and parts thereof, not specially provided for in this section, photographic dry plates, not specially provided for in this section, 15 per centum ad valorem; photographic-film negatives, imported in any form, for use in any way in connection with moving-picture exhibits, or for making or reproducing pictures for such exhibits, exposed but not developed, 2 cents per linear or running foot; * * * photographic-film positives, imported in any form, for use in any way in connection with moving-picture exhibits, * * * including herein all moving, motion, motophotography or cinematography film pictures, prints, positives or duplicates of every kind and nature, and of whatever substance made, 1 cent per linear or running foot: *Provided, however,* That all photographic films imported under this section shall be subject to such censorship as may be imposed by the Secretary of the Treasury.

576. Photographic and moving-picture films, sensitized but not exposed or developed. Free.

DESCRIPTION.

There are other articles which should be included in a full discussion of photographic goods, such as sensitized paper, moving-picture machines, and many other materials and apparatus. This survey aims to deal mainly with photographic cameras and films, but the statistical data in general deals with all photographic goods.

Imports have consisted principally of motion-picture films. Before the act of 1913 they were classed principally under "Motion-picture films, positives," but since the act of 1913 imports have been greater under the free list, "Motion-picture films, sensitized, but not exposed." Films entering as motion-picture positives or negatives are, in many cases, films which were no doubt manufactured in the United States but exposed abroad.

With reference to a reclassification of film scrap, see Summary, page 8.

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DOMESTIC PRODUCTION.

The value of the products of the photographic goods industry in the United States in 1914 was reported to be $39,041,000. This total includes articles not covered in paragraphs 380 and 576. There were 146 establishments reported, with a total capital of $36,388,000, employing 8,674 wage earners.

Materials and methods of production.—The greatest portion of the value of the products of the industry is turned out by the film branch. Celluloid forms the base of all photographic films and is manufactured extensively in the United States. According to the testimony presented before the Committee on Finance, 1913, celluloid is manufactured more cheaply in the United States than abroad:

> The pyroxyline support (cellulose) is made from a solution of pyroxyline (cellulose treated with nitric and sulphuric acids) in solvent menstrua, which solution is spread upon a suitable surface and dried (by evaporation of the solvent menstrua).
>
> The menstruum used by the Eastman Co. in the manufacture of its film support is wood alcohol, acetone, and fusel oil, camphor being added to the solution. That used by the Goodwin Film and Camera Co. in the manufacture of the Ansco film support is wood alcohol, fusel oil, and amyl acetate, a secret ingredient being added to the solution.
>
> In each case the quantity of menstruum is about five times, by weight, the quantity of pyroxyline.
>
> This pyroxyline film, when dried, is coated with the sensitized gelatin emulsion * * *. This consists of an aqueous solution of gelatin containing nitrate of silver, there being approximately equal parts of the two.[1]

The industry has been entirely dependent upon imported camphor, but the recent developments in the manufacture of synthetic camphor promise to free the industry from this position.

Glass and gelatin used in the manufacture of dry plates were imported prior to the war, but the domestic manufacturer has not been dependent upon imports of these materials since the war. However, there is only one manufacturer of photo glass in the United States, and it is reported that they now threaten (Apr. 23, 1920) to shut down their photo-glass department. Previous to the war one dry-plate company imported 90 per cent of their glass and gelatin.

Formerly all of the paper stock used for photographic paper was manufactured abroad, but owing to an improvement in the sensitizing solution now used American paper can be and is used.

Organization.—The corporate form of ownership predominates in the photographic goods industry, 85 of the 146 establishments reported in 1914 being owned by corporations, 44 by individuals, and 17 by some other form. The total average number of wage earners in the industry in 1914 was 8,674, of whom 8,429 were employed by corporations. The total value of products in 1914 was $39,041,000, of which $38,259,000 was credited to corporations.

There are a great number of small establishments engaged in the industry, but the number of establishments turning out a product of $100,000 or more in value was only 21 in 1914. These 21 establishments employed 7,693 of the wage earners. Only one establishment was reported with a product of over $1,000,000 and employing over 1,000 wage earners. This establishment was credited with a product of $33,489,000, and with 5,370 of the wage earners in 1914.

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[1] Tariff Hearings, Committee on Finance, 1913, pp. 1711, 1712.

It is quite evident that one establishment alone has a very large share of the entire industry. The capital of all establishments in 1914 was $36,388,000. The capital stock of the Eastman Kodak Co. was given as $25,698,500 in 1914, by Poor's Manual of Industrials. As reported by the Standard Statistics Co., the capital stock of the Eastman Kodak Co. in 1918 was $25,704,100.

While it is true that the industry is dominated by the corporate form of ownership, in fact by one large corporation with a large capitalization, it does not follow that the manufacture of photographic goods necessarily requires a large establishment. The fact that there are 146 establishments reported leads to the conclusion that the industry may be carried on by small manufacturers, at least certain branches of the industry.

Geographical distribution.—New York is the leading State in the production of photographic goods, with 59 of the 146 establishments reported in 1914. The establishments in New York employed 4,762 of the wage earners, or more than 50 per cent of the total, and turned out products valued at $35,175,000, which was approximately seven-eighths of the total.

Illinois had 18 establishments, with a product valued at $1,315,000. Missouri had 9 establishments, with products of photographic materials alone valued at $1,007,000 (photographic apparatus not stated). Some of the other States were Massachusetts, Ohio, Pennsylvania, New Jersey, and California.

History of the industry.—The development of the industry has taken place mainly since the census of 1889, when the value of products was $2,745,000. In round numbers the increase for the subsequent census years has been as follows: 1899, $8,000,000; 1904, $13,000,000; 1909, $22,000,000; 1914, $39,000,000. Generally speaking, the tariff rate was 25 per cent ad valorem from 1894 until 1913.

The growth of the industry does not appear to be closely connected with the tariff. In support of this view the following extract is quoted from the statement of the Eastman Kodak Co. before the Committee on Finance, tariff hearings, 1913, pages 1708, 1709:

> In fact, it may be stated that the Eastman Co. has been viewed for years, both here and abroad, not only as the originator and developer of amateur photography, but as the leading manufacturer of photographic apparatus and supplies generally in the world, and it attained this leading position and has maintained it during all these years, not because of its wealth, but simply and solely because of the quality of its products and its fair treatment of the public in the matter of the price thereof.

Domestic production and consumption.—The total value of products of the photographic goods industry (including both photographic apparatus, such as cameras, motion-picture machines, and other apparatus, and photographic materials, such as films, sensitized paper, and other materials), was $39,041,000 in 1914. Photographic apparatus was valued at only $4,273,000, while photographic materials reached a total of $34,768,000.

Imports have been small, amounting to less than $3,000,000 in 1914, the greater portion of which probably consisted of imports of films manufactured in the United States but exposed abroad, while exports amounted to $9,431,800 in 1914 and more than $25,000,000 in 1920 (calendar year).

It appears from these facts, and also from the foregoing statement with reference to the leading position of the United States in the photographic goods industry, that domestic consumption is almost entirely supplied by domestic production, and that exports now account for a considerable portion of the total sales.

Domestic exports.—The value of exports has been increasing rapidly in recent years, the total in 1910 being $4,765,155, while the total in 1920 was $25,431,652.

Exports of photographic goods were not separately stated prior to 1912. In 1912 the value of exports of cameras was $563,151, while the exports of motion-picture films reached a total of 80,000,000 linear feet, valued at $6,815,060.

The exports of cameras have increased considerably, reaching their highest total in the year 1920, with a value of $3,548,433. Films have been divided since 1912 into motion-picture films not exposed, exposed, and other sensitized goods (including other films). Motion-picture films, not exposed, reached their highest exportation since the year 1910 in the year 1914, with a total of 153,359,550 linear feet, valued at $4,264,722. Motion-picture films, exposed, reached their highest footage total since 1910 in the year 1916, although the value of exports was greater in 1919 with a decreased footage. The figures are 158,751,786 linear feet in 1916, with a value of $6,757,658, and 153,237,260 linear feet, valued at $8,066,723, in 1919. Other sensitized goods exported in 1916 were valued at $3,596,597, but it is not known what part of this total consisted of films. The exports of all other photographic apparatus and goods reached their height in 1920, with a total value of $6,303,433.

It is evident that motion-picture films are by far the most important item of export in this industry, furnishing $10,746,986 in 1919 of the total export of photographic goods, or approximately one-half of the total exportation.

The destination of American exports is given in detail in the statistical tables. England, Canada, France, Australia, and Italy have been the principal purchasers of American exports, but they have also been pretty thoroughly scattered all over the world.

IMPORTS.

Imports for consumption have remained quite constant since 1910, at a value somewhat in excess of $1,000,000 and averaging about $1,500,000. In 1914 and 1920 the totals were considerably above the average, reaching the total of $2,913,293 in 1914 and $5,289,612 in 1920 (calendar year).

The import figures in this case are not of much value with reference to the question of foreign competition, since it is not known what portion of the imports are distinctly of foreign origin. Prior to the act of 1913 imports were stated only for motion-picture positives; motion-picture films, all other; and all other films and plates. Since 1913 several additional classes have been added, as will be seen from the following statement of the trend of imports:

Cameras and parts of, amounting to a value of $247,290 in 1914, declined to the sum of $2,152 in 1918, but reached their highest value, $355,660, in 1920 (calendar year).

Dry plates were not separately stated until 1916, when imports were valued at $74,183, declining to $58,669 in 1920.

Motion-picture films, sensitized but not exposed, free, were first stated in 1914, and imports were valued at $889,560. They did not fluctuate materially between that time and 1918, but in 1919 declined to $283,271, and in 1920 reached their highest, $1,697,976.

Motion-picture films, negatives, dutiable, were valued at $402,704 in 1914 and at $728,899 in 1920.

Motion-picture films, positives, dutiable, reached their height in 1914, with imports valued at $1,009,469, but declined to a value of $204,217 in 1920.

Imports of other films, sensitized but not exposed, free, have increased in value from $59,880 in 1914 to $2,248,666 in 1920, this latter, with the exception of $5,943, being the value of importations from Canada.

All other films and plates, dutiable, have been pretty well distributed among the other classes since 1914, and have been credited with no imports since 1915, when their value was only $91,294.

Summarizing the above classes of imports for 1920 discloses the fact that about three-fourths of the total value was imported under the free list, which consisted principally of motion-picture films, sensitized but not exposed. The comparative totals were: Free list, $3,949,867; dutiable, $1,339,745. Probably a large part of the celluloid base of the imported sensitized motion-picture film was manufactured in this country, but sent abroad to be sensitized.

Imports have come principally from France, Germany, Italy, and England.

PRICES.

During the war the prices of spool films were higher in England than in the United States. For the purposes of comparison the post-card size 6-exposure roll film is taken. The net wholesale price of this film in the United States is now (June, 1920) $35.91 per 100 rolls, the retail price, including the war tax, being 55 cents each. Before March 15, 1920, the retail price, not including the war tax, of this film was 40 cents. The 1919 catalogue price of English roll films, the same size, at normal exchange, was 56 cents. The present price, if any change has been made, is not known.

The price of English plates, 6½ by 8½, at normal exchange, is $3.36 a dozen, while the American list is $1.90 a dozen. Duty is paid on English film at the above price, that being the market value in England.

TARIFF HISTORY.

Photographic films and photographic dry plates were assessed for duty in the act of 1894 at 25 per cent ad valorem. No change was made in the act of 1897. The act of 1909 provided a specific duty of 1½ cents per linear foot for motion-picture positives, but otherwise the duties on films and plates of all kinds remained at the same rate.

The act of 1913 placed photographic and moving-picture films, sensitized but not exposed or developed, on the free list. A duty of 15 per cent ad valorem was assessed on cameras and parts thereof, and the duty on dry plates was reduced to 15 per cent ad valorem.

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Motion-picture negatives, exposed but not developed, were assessed at 2 cents per linear foot; if developed also, 3 cents per linear foot; while motion-picture positives were reduced from 1½ cents to 1 cent per linear foot.

The effects of the changes made by the act of 1913 are not entirely obvious. The total value of imports in 1914 was considerably greater than in former years. There was an increase in the value of imports subject to duty, and in addition, imports valued at nearly $1,000,000 were entered free of duty. It would appear that the changes in the act of 1913 stimulated imports. Since 1914 there has been a decrease in total imports, no doubt due to the war.

The effect of placing films not exposed or developed on the free list is quite evident, as imports under the free list have increased over 1913, while imports under the dutiable list have decreased since 1913. The extent to which this tendency might have affected American manufacturers had the war not intervened can not be accurately estimated.

At the same time that imports of films, sensitized but not exposed, have increased in value under the free list, exports of this class of films have decreased. It would appear that there was less demand for such film abroad; a greater demand for it in the United States; that the manufacture of motion-picture film, or its sensitizing at least, had been developed abroad; or possibly that a combination of these factors may have existed.

COMPETITIVE CONDITIONS AND TARIFF CONSIDERATIONS.

It will be seen by reference to the summary tables, page 9, that the ratio of exports to domestic production exceeded the ratio of imports to domestic production nearly three times in 1914. This appears to be conclusive evidence that foreign competition was not serious before the war, at least when total values are considered. During the war importation decreased, and exports from the United States increased greatly, reaching a total of nearly $16,000,000 in 1915, as compared with imports valued at less than $1,500,000.

The Eastman Kodak Co. has been held to be an illegal monopoly by decree of the District Court of the United States, Western District of New York, January 20, 1916.[1] The Eastman Kodak Co., according to its own statement, "has been viewed for years, * * * as the leading manufacturer of photographic apparatus and supplies generally in the world, * * *."[2] The case against the Eastman Kodak Co. is pending on appeal in the United States Supreme Court.

The present market price of dry plates is higher abroad than in the United States. Glass and gelatin, used in the manufacture of dry plates, were imported almost wholly before the war, and there is an indication that the American makers will be dependent upon imports for glass again in the near future. Camphor is another essential material in the manufacture of films.

The importation of motion-picture films under the free list increased under the act of 1913. The value of exports of motion-picture films, not exposed, in the fiscal year 1918 was $1,385,291, com-

[1] See Fed. Rep., vol. 226, pp. 62–81.
[2] See Tariff Hearings, Committee on Finance, 1913, pp. 1708, 1709

pared with an import value of $739,135. Since the Eastman Co. has extensive manufacturing interests in European countries, it is possible that some of this film might have been manufactured by them abroad.

The imports of cameras, dry plates, and other films and plates have been relatively small, while the exports of these classes have been quite large in comparison.

From the foregoing, excepting possibly in the case of certain materials, there does not appear to be any particular tariff problem involved in a consideration of the photographic goods industry.

Photograph goods—Production in United States by States.

[From Federal census.]

	1899	1904	1909	1914
Photographic apparatus	$2,026,000	$3,479,000	$1,184,000	$4,273,000
Photographic materials	5,773,000	9,544,000	21,378,000	34,768,000
Total	7,799,000	13,023,000	22,562,000	39,041,000
Photographic apparatus				4,273,000
Cameras				1,254,000
Motion-picture machines				1,820,000
All other apparatus and parts				1,199,000
Photographic materials				34,768,000
Motion-picture films, not exposed [1]				411,000
All other photographic materials				34,357,000
Photographic apparatus (by States)				4,273,000
California				73,000
Illinois				511,000
New Jersey				121,000
New York				3,063,000
Ohio				23,000
Pennsylvania				61,000
All other				421,000
Photographic materials (by States)				34,768,000
Illinois				804,000
Massachusetts				265,000
Missouri				1,007,000
New York				32,112,000
Ohio				114,000
Pennsylvania				177,000
All other				289,000

[1] This does not include the value of film manufactured by the Eastman Kodak Co., which is included with "All other photographic materials."

Cameras, and parts of (dutiable)—Imports by countries (fiscal years).

	Imported from—				Total.
	France.	Germany.	England.	All other.	
1914 [1]	$38,013	$125,468	$82,332	$1,477	$247,290
1915	43,957	77,426	78,465	8,655	208,503
1916	48,615	5,064	31,937	2,221	87,837
1917	13,494		13,111	2,577	29,182
1918	927		676	549	2,152
1918 [2]	2,014		325	530	2,869
1919 [2]	10,958		6,690	2,267	19,915
1920 [2]					355,660

[1] Figures cover period since Oct. 4, 1913, to June 30, 1914. Not separately stated prior to 1914.
[2] Calendar year.

Dry plates (dutiable)[1]*—Imports by countries (fiscal years).*

	Imported from—			Total.
	France.	England.	All other.	
1916	$32,822	$41,267	$94	$74,183
1917	18,725	45,632	110	64,467
1918	12,217	19,920	1,720	33,857
1918[2]	5,598	17,324	1,131	24,053
1919[2]	7,957	9,555	98	17,610
1920[2]	.....	.....	.....	58,669

[1] Included in "All other films and plates" prior to 1916.
[2] Calendar year.

Motion-picture films, sensitized but not exposed (free)[1]*—Imports by countries.*

FISCAL YEARS.

Imported from—	1914		1915		1916	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Linear feet.		*Linear feet.*		*Linear feet.*	
Belgium	8,666,620	$208,357	818,550	$20,197	.....	.....
France	25,167,799	452,586	45,138,307	618,035	58,217,224	$743,218
Germany	7,932,381	156,675	8,271,160	161,831	.....	.....
England	2,466,697	57,972	7,172,888	167,802	270,485	6,595
All other	483,826	13,970	1,407	42	3,079	210
Total	44,717,323	889,560	61,402,312	967,907	58,490,788	750,023

Imported from—	1917		1918	
	Quantity.	Value.	Quantity.	Value.
	Linear feet.		*Linear feet.*	
France	52,223,715	$800,326	45,077,632	$680,337
England	67,960	1,866	2,290,501	54,719
All other	2,400	132	94,582	4,079
Total	52,294,075	802,324	47,462,715	739,135

CALENDAR YEARS.

Imported from—	1918		1919		1920	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Linear feet.		*Linear feet.*		*Linear feet.*	
France	23,724,338	$367,956	13,348,828	$254,986	.....	.....
Germany	.....	.....	153,663	14,354	.....	.....
England	1,889,394	45,721	218,411	12,848	.....	.....
All other	95,723	6,307	25,600	1,083	.....	.....
Total	25,709,455	419,984	13,746,502	283,271	99,828,532	$1,697,976

[1] Stated separately only since tariff act of Oct. 3, 1913.

Motion-picture films, negatives (dutiable)[1]*—Imports by countries (fiscal years).*

Imported from—	1912		1913		1914	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Linear feet.		*Linear feet.*		*Linear feet.*	
France	(1)	$109,910	(1)	$274,746	(1)	$155,902
Germany	(1)	20,104	(1)	73,365	(1)	67,430
Italy	(1)	309	(1)	30,993	(1)	74,779
England	(1)	35,762	(1)	42,166	(1)	67,586
All other	(1)	13,045	(1)	36,885	(1)	37,007
Total		179,130		458,155		402,704

Imported from—	1915		1916		1917	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Linear feet.		*Linear feet.*		*Linear feet.*	
France	(1)	$57,666	107,873	$28,672	349,514	$91,055
Germany	(1)	12,154	52,290	36,283	13,462	2,565
Italy	(1)	36,707	56,142	12,421	66,965	72,509
England	(1)	72,179	179,689	104,738	231,577	145,668
All other	(1)	80,094	368,111	43,576	288,634	136,465
Total		258,800	764,105	225,690	950,152	448,252

Imported from—	1918		1918[2]		1919[2]		1920	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Linear ft.		*Linear ft.*		*Linear ft.*		*Linear ft.*	
France	90,057	$14,665	82,242	$30,542	112,452	$114,259	.....	.....
Germany	.....	.....	.....	.....	1,045	261	.....	.....
Italy	58,345	33,623	30,819	18,133	47,294	6,192	.....	.....
England	156,071	68,251	104,453	73,178	253,234	117,253	.....	.....
All other	408,890	49,494	183,703	46,158	422,064	[3] 146,646	.....	.....
Total	713,363	166,033	401,217	168,011	836,089	384,611	2,032,416	$728,899

[1] Quantity—not stated. Figures not separately stated prior to 1912.
[2] Calendar year.
[3] Canada, 1919—105,998 linear feet, value $66,526.

Motion-picture films, positives (dutiable)—Imports by countries.

FISCAL YEARS.

Imported from—	1910		1911		1912	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Linear feet.		*Linear feet.*		*Linear feet.*	
Denmark	1,084,519	$65,543	1,131,578	$68,638	1,232,607	$76,819
France	9,051,112	555,603	6,834,291	407,609	6,857,037	413,618
Germany	100,416	4,257	55,758	2,060	661,848	27,873
Italy	1,174,738	65,806	2,524,989	149,738	2,842,751	162,682
England	1,254,813	74,001	1,005,407	51,243	2,334,451	127,400
All other	164,317	5,815	173,104	5,827	346,074	16,691
Total	12,829,915	771,025	11,725,127	685,115	14,274,768	825,083

Motion-picture films, positives (dutiable)—Imports by countries—Continued.

FISCAL YEARS—Continued.

Imported from—	1913		1914		1915	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Linear feet.		*Linear feet.*		*Linear feet.*	
Denmark	1,328,560	$87,690	1,162,964	$81,390	600,665	$41,403
France	6,888,470	420,366	6,517,613	273,033	2,900,530	71,632
Germany	1,515,395	54,854	2,159,231	116,939	582,237	30,899
Italy	2,595,817	139,180	3,043,262	172,679	1,390,474	65,046
England	2,863,701	146,133	6,386,033	327,994	4,274,490	163,559
All other	481,883	24,388	788,041	37,434	1,041,043	39,460
Total	15,673,826	872,611	20,057,144	1,009,469	10,789,439	411,999

Imported from—	1916		1917		1918	
	Quantity.	Value.	Quantity	Value.	Quantity	Value.
	Linear feet.		*Linear feet.*		*Linear feet.*	
Denmark	262,161	$17,974	85,435	$5,802	.....	.....
France	3,804,227	114,364	1,884,233	79,363	695,752	$32,854
Germany	19,719	755	11,142	532	.....	.....
Italy	567,275	26,340	409,581	25,178	449,484	32,892
England	1,715,445	81,879	770,726	32,664	1,741,253	61,309
All other	374,161	15,010	641,743	83,579	488,008	50,093
Total	6,742,988	256,332	3,802,960	227,118	3,374,497	177,148

CALENDAR YEARS.

Imported from—	1918		1919		1920	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Linear feet.		*Linear feet.*		*Linear feet.*	
Denmark	.....	.....	132,434	$7,384	.....	.....
France	640,365	$30,939	756,783	34,657	.....	.....
Italy	466,791	24,607	61,196	5,812	.....	.....
England	374,689	21,436	768,814	43,574	.....	.....
Canada	42,526	2,675	15,118	1,118	.....	.....
Japan	169,316	17,111	118,541	10,373	.....	.....
All other	173,071	28,142	231,309	12,144	.....	.....
Total	1,866,758	124,910	2,084,195	115,062	4,201,047	$204,217

Motion-picture films, all other (dutiable)[1]*—Imports by countries (fiscal years).*

Imported from—	1912	1913	1914
France	$109,910	$274,746	$155,902
Germany	20,104	73,365	67,430
Italy	309	30,993	74,779
England	35,762	42,166	67,586
All other	13,045	36,885	37,007
Total	179,130	458,155	402,704

[1] Included in "All other films and plates" prior to 1912.

All other films, sensitized but not exposed (free)[1]*—Imports by countries.*

FISCAL YEARS.

Imported from—	1914	1915	1916	1917	1918
France	$57,859	$32,632	.....	$28	$100
Germany	135	354	.....	.....	.....
England	1,720	5,160	$26,119	24,839	4,358
All other[2]	166	942	126	10	[2] 199,261
Total	59,880	38,488	26,245	24,877	203,719

CALENDAR YEARS.

Imported from—	1918	1919	1920	
			Quantity.	Value.
			Number.	
France	$100	$37	.....	.....
England	3,552	5,906	.....	.....
Canada	409,131	858,765	.....	.....
Total	412,783	864,708	13,102,092	$2,248,666

[1] Figures cover period since Oct. 3, 1913.

[2] Canada, 1918, $198,711.

All other films and plates (dutiable)—Imports by countries (fiscal years).

	Imports from—				
	France.	Germany.	England.	All other.	Total.
1910	$270,271	$6,943	$124,102	$14,761	$416,077
1911	484,751	87,973	101,404	46,843	670,971
1912	109,147	4,388	82,680	7,629	203,844
1913	119,581	76,936	128,929	7,124	332,570
1914	61,559	55,322	144,667	3,107	264,655
1915	20,256	2,355	68,552	131	91,294

Photographic goods—Total imports for consumption—Revenue.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:						*Per cent.*
1907	Dutiable	.....	$38,528	$9,631	.....	25.00
1908	do	.....	66,162	16,540	.....	25.00
1909	do	.....	121,881	30,470	.....	25.00
1910	do	.....	1,185,909	292,532	.....	24.67
1911	do	.....	1,346,420	340,467	.....	25.29
1912	Free	.....	450	.....	.....	.....
1912	Dutiable	.....	1,170,138	300,343	.....	25.66
1913	Free	.....	1,912	.....	.....	.....
1913	Dutiable	.....	1,633,283	423,899	.....	25.95
1914	Free	.....	987,176	.....	.....	.....
1914	Dutiable	.....	1,926,117	363,207	.....	18.86
1915	Free	.....	1,007,033	.....	.....	.....
1915	Dutiable	.....	973,439	189,325	.....	19.45
1916	Free	.....	776,266	.....	.....	.....
1916	Dutiable	.....	644,636	111,104	.....	17.23
1917	Free	.....	824,821	.....	.....	.....
1917	Dutiable	.....	770,524	78,981	.....	10.25
1918	Free	.....	942,096	.....	.....	.....
1918	Dutiable	.....	381,531	61,781	.....	16.19
1919	Free	.....	1,107,655	.....	.....	.....
1919	Dutiable	.....	458,796	34,135	.....	7.44
1920	Free	.....	2,146,511	.....	.....	.....
1920	Dutiable	.....	784,091	89,549	.....	11.42
1920[1]	Free	.....	3,949,867	.....	.....	.....
1920[1]	Dutiable	.....	1,339,745	155,456	.....	11.60
1921[2]	Free	.....	2,862,959	.....	.....	.....
1921	Dutiable	.....	760,691	.....	.....	.....

[1] Calendar year.

[2] 6 months ending June 30, 1921.

Cameras and parts of n. s. p. f.—Imports for consumption—Revenue.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:						*Per cent.*
1914	15 per cent		$261,547	$39,232		15.00
1915	do		201,763	30,264		15.00
1916	do		88,335	13,250		15.00
1917	do		29,646	4,446		15.00
1918	do		2,028	304		15.00
Calendar year:						
1918	do		2,739	411		15.00
1919	do		19,915	2,987		15.00
1920	do		358,060	53,709		15.00
1921 [1]	do		194,122			15.00

[1] Six months ending June 30, 1921.

Dry plates and films—Imports for consumption—Revenue.

ALL KINDS.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:						*Per cent.*
1908	25 per cent		$66,162	$16,540		25
1909	do		121,880	30,470		25

MOVING-PICTURE FILMS NOT DEVELOPED OR EXPOSED.

Fiscal year:						
1910	25 per cent		$153,994	$38,498		25
1911	do		428,272	107,068		25
1912	do		75,328	18,832		25
1913	do		27,229	6,807		25
1914	do		10,814	2,703		25

ALL OTHER.

Fiscal year:						
1910	25 per cent		$134,883	$33,720		25
1911	do		178,141	44,535		25
1912	do		201,510	50,377		25
1913	do		466,325	116,581		25
1914	do		105,625	26,406		25

Dry plates and films—Dry plates n. s. p. f.—Imports for consumption—Revenue.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:		*Dozens.*				*Per cent.*
1914	15 per cent		$150,442	$22,566		15
1915	do		100,029	15,004		15
1916	do		73,834	11,075		15
1917	do		64,484	9,672		15
1918	do		35,322	5,298		15
Calendar year:						
1918	do		24,472	3,671		15
1919	do	16,557	18,181	2,727	$1.098	15
1920	do	64,452	50,266	7,539	.776	15
1921	do	53,718	37,977			15

Dry plates and films—Films sensitized but not exposed or developed—Imports for consumption—Revenue.

FILMS FOR MOVING PICTURES.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:		*Linear feet.*				
1914	Free	46,174,377	$923,974		$0.020	
1915	do	61,367,071	963,635		.016	
1916	do	58,490,788	750,023		.013	
1917	do	52,294,075	802,324		.015	
1918	do	47,467,077	739,135		.016	
Calendar year:						
1918	do	25,713,817	419,984		.016	
1919	do	13,246,502	283,271		.021	
1920	do	99,828,532	1,697,976		.017	
1921 [1]	do	74,499,651	1,388,045			

ALL OTHER.

Fiscal year:		*Number.*				
1914	Free		$60,202			
1915	do		42,760			
1916	do		26,243			
1917	do		21,675			
1918	do		202,779			
Calendar year:						
1918	do		456,412			
1919	do	4,681,826	864,708		$0.185	
1920	do	13,102,092	2,248,666		.171	
1921 [1]	do	6,837,456	1,474,914			

[1] 6 months ending June 30, 1921.

Dry plates and films—Film negatives in any form for use in any way in connection with moving-picture exhibits or for making or reproducing pictures for such exhibits—Imports for consumption—Revenue.

ALL KINDS.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1910	25 per cent		$115,429	$28,857		25.00
1911	do		48,807	12,201		25.00
1912	do		86,108	21,527		25.00
1913	do		247,741	61,935		25.00
1914	do		91,200	22,800		25.00

EXPOSED BUT NOT DEVELOPED.

Fiscal year:		*Linear feet.*				
1914	2 cents per linear foot.	245,029	$45,493	$4,900	$0.186	10.77
1915	do	284,452	36,043	5,689	.127	15.78
1916	do	245,204	28,018	4,904	.114	17.50
1917	do	160,998	92,334	3,219	.574	3.49
1918	do	158,132	18,257	3,162	.115	17.87
Calendar year:						
1918	do	74,982	8,206	1,500	.109	18.27
1919	do	301,767	112,430	6,035	.372	5.37
1920	do	794,348	250,392	15,886	.315	6.34
1921 [1]	do	186,822	32,474	3,736		

EXPOSED AND DEVELOPED.

Fiscal year:						
1914	3 cents per linear foot.	1,147,316	$280,638	$34,419	$0.245	12.26
1915	do	907,575	207,789	27,227	.229	13.13
1916	do	444,567	186,434	13,337	.419	7.15
1917	do	783,419	342,669	23,502	.437	6.86
1918	do	596,355	144,422	17,890	.242	12.39
Calendar year:						
1918	do	425,490	160,768	12,765	.378	7.94
1919	do	533,322	272,631	16,000	.510	5.88
1920	do	1,209,313	474,298	36,279	.392	7.65
1921 [1]	do	760,423	293,187	22,812		

Dry plates and films—Film positives in any form for use in any way in connection with moving-picture exhibits, including all moving, motion, motophotography, or linematography film pictures, prints, positives, or duplicates of every kind and of whatever substance made—Imports for consumption—Revenue.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:		*Linear feet.*				*Per cent.*
1910	1½ cents per linear foot.	12,704,330	$776,929	$190,565	$0.061	24.52
1911	do	11,660,731	682,448	174,911	.059	25.63
1912	do	13,968,278	806,831	209,524	.058	25.97
1913	do	15,874,823	890,813	238,122	.056	26.73
1914	do	2,994,730	151,538	44,920	.051	29.64
1914	1 cent per linear foot.	16,489,277	827,009	164,892	.050	19.94
1915	do	11,071,559	425,689	110,715	.038	26.01
1916	do	6,786,546	228,557	67,865	.038	26.25
1917	do	3,780,163	226,083	37,801	.060	16.72
1918	do	3,504,697	181,202	35,046	.051	19.34
Calendar year:						
1918	do	1,958,848	123,174	19,588	.063	15.90
1919	do	1,947,368	109,678	19,474	.056	17.76
1920	do	4,189,647	203,879	41,896	.048	20.55
1921 [1]	do	3,137,173	202,981	31,371		

[1] 6 months ending June 30, 1921.

Photographic goods [1]*—Domestic exports (fiscal years).*

Exported to—	1910	1911	Exported to—	1910	1911
France	$220,415	$223,673	Brazil	$42,086	$110,128
Germany	42,846	56,753	Japan	80,814	83,500
England	3,456,530	5,429,094	Australia	53,686	76,426
Canada	382,336	479,335	Philippine Islands	49,573	142,872
Mexico	128,400	153,810	All other	173,935	220,208
Cuba	62,715	96,740			
Argentina	71,819	70,064	Total	4,765,155	7,142,603

[1] Stated separately after 1911.

Cameras [1]*—Domestic exports (fiscal years).*

Exported to—	1912	1913	1914	1915	1916
France	$253	$270	$666	$49,187	$64,473
England	342,250	550,375	423,747	267,557	976,976
Canada	42,006	45,592	30,525	23,608	45,989
Mexico	20,247	20,891	8,472	2,063	1,177
Cuba	24,740	6,628	4,841	3,533	9,807
Argentina	21,425	12,638	12,578	2,424	21,812
British India	328	609	1,756	8	140
Australia	44,972	79,658	94,552	51,722	110,043
New Zealand	6,049	26,349	13,961	5,579	24,975
All other	60,881	66,619	72,908	85,215	59,304
Total	563,151	809,629	664,006	490,896	1,314,696

Exported to—	1917	1918	1918 [2]	1919 [2]	1920 [2]
France	$242,930	$69,534	$29,235	$331,660	.....
England	861,305	646	12,433	465,567	.....
Canada	127,508	104,671	80,534	134,580	.....
Mexico	6,999	14,662	12,457	19,322	.....
Cuba	11,912	18,997	16,340	38,436	.....
Argentina	7,318	48,886	35,917	24,599	.....
British India	11,169	141,018	154,800	33,124	.....
Australia	190,107	226,546	244,176	152,184	.....
New Zealand	81,380	35,926	102,109	38,550	.....
All other	161,383	308,533	420,387	410,388	.....
Total	1,702,011	969,419	1,108,388	1,648,410	$3,548,433

[1] Included in "photographic goods" prior to 1912. [2] Calendar year.

Motion-picture films [1]*—Domestic exports (fiscal years).*

Exported to—	1912		Exported to—	1912	
	Quantity.	Value.		Quantity.	Value.
	Linear feet.			*Linear feet.*	
France	1,196,237	$390,395	Japan	205,000	$13,235
Italy	38,000	16,000	Australia	268,400	19,207
England	69,967,613	5,831,337	Philippine Islands	795,530	43,697
Canada	5,374,344	388,822	All other	1,360,289	47,860
Argentina	150,167	7,685			
Brazil	679,722	56,822	Total	80,035,302	6,815,060

[1] Included in "photographic goods" prior to 1912; stated separately as "not exposed" and "exposed" after 1912.

Other sensitized goods[1]*—Domestic exports (fiscal years).*

Exported to—	1912	1913	1914	1915	1916
Denmark	$1,454	$1,515	$685	$265,582	$224,074
France	20,079	12,605	4,408	21,454	207,103
Italy	2,050	300	421	3,746	58,532
England	962,098	3,015,178	864,028	1,221,811	2,121,373
Canada	121,286	97,415	42,543	17,518	140,371
Mexico	35,783	54,817	84,541	38,951	22,206
Cuba	40,808	62,447	62,476	56,838	78,078
Argentina	38,371	39,218	35,033	54,747	217,141
Brazil	26,976	27,018	32,417	19,572	60,800
Japan	51,692	22,652	49,259	24,555	82,149
Australia	3,681	13,645	14,094	30,982	83,549
All other	105,759	89,561	158,311	115,862	301,221
Total	1,410,087	3,436,371	1,348,216	1,871,618	3,596,597

Exported to—	1917	1918	1918[2]	1919[2]	1920[2]
Denmark	$12,815	$570	$40,029	$21,803	.....
France	445,593	210,293	50,347	288,258	.....
Italy	128,609	187,025	116,868	42,690	.....
England	1,172,197	700,641	423,890	1,314,898	.....
Canada	196,820	177,951	180,244	208,474	.....
Mexico	67,639	92,713	88,724	159,548	.....
Cuba	80,186	140,398	157,507	99,998	.....
Argentina	174,751	186,920	216,676	228,292	.....
Brazil	110,229	125,055	99,598	199,491	.....
Japan	123,393	293,327	362,902	616,409	.....
Australia	139,555	79,369	93,187	155,643	.....
All other	434,248	744,579	778,462	872,677	.....
Total	3,086,035	2,938,836	2,616,434	4,208,181	$5,981,340

[1] Included in "Photographic goods" prior to 1912. This class contains paper and other sensitized goods not included in pars. 380 or 576. No doubt a large share of this total does consist, however, of photographic films other than moving-picture films, and photographic dry plates.
[2] Calendar year.

Other apparatus and all other photographic goods[1]*—Domestic exports (fiscal years).*

Exported to—	1912	1913	1914	1915	1916
Other apparatus	$180,243	$268,088	$183,660	$102,673	$455,682
All other picture goods	476,955	593,697	688,272	721,156	1,641,315

Exported to—	1917	1918	1918[2]	1919[2]	1920[2]
Other apparatus	$436,420	$545,629	$782,177	$2,105,061	$3,218,805
All other picture goods	1,338,536	1,318,694	1,345,174	1,939,924	3,084,628

[1] These classes are not given here by countries, as they do not seem to include mainly photographic goods, covered by tariff pars. 380 and 576.
[2] Calendar years.

Photographic cameras, dry plates, and films—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1913	380	Photographic cameras, and parts thereof, not specially provided for in this section, photographic dry plates, not specially provided for in this section.	15 per cent ad valorem.
		Photographic-film negatives:	
		Imported in any form, for use in any way in connection with moving-picture exhibits, or for making or reproducing pictures for such exhibits, exposed but not developed.	2 cents per linear or running foot.
		If exposed and developed	3 cents per linear or running foot.
		Photographic-film positives, imported in any form, for use in any way in connection with moving-picture exhibits, including herein all moving, motion, motophotography or cinematography film pictures, prints, positives, or duplicates of every kind and nature, and of whatever substance made. *Provided, however*, That all photographic films imported under this section shall be subject to such censorship as may be imposed by the Secretary of the Treasury.	1 cent per linear or running foot.
	404	Articles the growth, produce, or manufacture of the United States, when returned after having been exported, without having been advanced in value or improved in condition by any process of manufacture or other means * * * photographic dry plates or films of American manufacture (except moving-picture films), exposed abroad, whether developed or not, and films from moving-picture machines, light struck or otherwise damaged, or worn out, so as to be unsuitable for any other purpose than the recovery of the constituent materials, provided the basic films are of American manufacture * * *.	Free.
	576	Photographic and moving-picture films, sensitized, but not exposed or developed.	Free list.
1912	.....	That it shall be unlawful for any person to * * * bring or cause to be brought into the United States from abroad any film or other pictorial representation of any prize fight or encounter of pugilists, under whatever name, which is designed to be used or may be used for purposes of public exhibition * * *.	
1909	474	Photographic dry plates or films, not otherwise specially provided for in this section.	25 per cent ad valorem.
		Photographic-film negatives, imported in any form, for use in any way in connection with moving-picture exhibits, or for making or reproducing pictures for such exhibits and moving-picture films not developed or exposed.	Do.
		Photographic film positives, imported in any form, for use in any way in connection with moving-picture exhibits, including herein all moving, motion, motophotography or cinematography film pictures, prints, positives or duplicates of every kind and nature, and of whatever substance made.	1½ cents per linear or running foot.
	500	Articles the growth, produce, or manufacture of the United States, not including animals, when returned after having been exported, without having been advanced in value or improved in condition by any process of manufacture or other means: * * * photographic dry plates or films of American manufacture (except moving-picture films), exposed abroad, whether developed or not, and films from moving-picture machines, light struck or otherwise damaged, or worn out, so as to be unsuitable for any other purpose than the recovery of the constituent materials, provided the basic films are of American manufacture * * *.	Free.
1897	458	Photographic dry plates or films	25 per cent ad valorem.
1894	358½	....do	Do.
1890	.....	(Not enumerated)	
1883	.....	....do	

Court and Treasury Decisions.

Cinematograph or moving-picture films were held to be photographs dutiable under paragraph 403 of the act of 1897. (United States *v.* Sussfeld, 1 Ct. Cust. Appls. 51, of 1910.) A camera without lens was held dutiable under paragraph 111 of that act relating to optical instruments, or frames, or mountings for the same (Abstract 18446, T. D. 28850, of 1908), and enlargers, plate holders and slides for cameras were held dutiable under paragraph 108, a similar provision in the act of 1909. (Abstract 32370, T. D. 33433, of

1913.) Camera tripods were declared not to be parts of cameras within paragraph 380 of the act of 1913, but dutiable as manufactures of metal under paragraph 167. (G. A. 7650, T. D. 34998, of 1914.)

The following articles were held dutiable as cameras or parts thereof under paragraph 380:

Enlarging cameras. (G. A. 7915, T. D. 36451, of 1916; Abstracts 40930 and 41125, of 1917.)

Photographic screens, invoiced as "ecrans" to be attached to a square frame on the lens of the camera, used in taking pictures in colors. (Abstract 40173, of 1916; Abstract 41167, of 1917.)

Photographic screens composed of two sheets of plain glass having a coat of geletin and balsam between them. (Abstract 40486, of 1916.)

Cooke's process prisms in the shape of a triangular prism, the back and two sides entirely of metal, a lens in each of two faces, etc. (Abstract 39352, of 1916; Abstract 41177, of 1917.)

Cameras with microscopes and other parts imported together, but each having a separate invoiced price, were classified by the collector as entireties with the microscope under paragraph 94, but the cameras were held separately dutiable. It was shown that the camera is sometimes used with the microscope and at other times separately and independently. (Abstract 40680, of 1917.) An exposed and developed photograph-film negative printed from a positive taken from the original negative is not dutiable as "photographic-film negatives" at 3 cents, but at 1 cent per linear or running foot under this paragraph as "moving, motion, motophotography or cinematography film pictures * * * of duplicates of every kind and nature." (G. A. 8039, T. D. 37073, of 1917, following Abstract 39882, of 1916.)

Scraps of sensitized film produced in cutting to small sizes large rolls of photographic film, suitable for no other commercial purpose than the recovery of the silver salts and the pyroxylin were classified as waste under the act of 1909. (G. A. 7133, T. D. 31130, of 1910.)

Evidence in accordance with the regulations of the Treasury Department must be produced for the free entry of moving-picture films as American goods exported and returned. (T. D. 34892, of 1914, and Stone *v.* United States, 7 Ct. Cust. Appls. 439, of 1917.)

Under the act of July 31, 1912, any film or other pictorial representation of a prize fight, under whatever name, which is designed to be used or made to be used for public exhibition, is forbidden importation under penalty of fine or imprisonment, or both. (Weber *v.* Freed, 239 U. S. 325, and Kalisthenic Exhibitor Co. (Inc.) *v.* Emmons, 225 Fed. 902, of 1915.) An encounter conducted between two pugilists or boxers under the Marquis of Queensbury rules in a 24-foot ring, the contestants wearing regular boxing gloves, 5 ounces in weight, and the contest being limited to 20 rounds, is a prize fight within the meaning of the statute. A picture film representing such a contest is prohibited importation and subject to libel and condemnation. (T. D. 35531, of 1915.) A negative film made on the American side of the Canadian border from a positive film exposed on the Canadian side is also within the prohibition. (Pantomimic Corp. *v.* Malone, 238 Fed. 135, of 1916.)

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UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPH 376 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

WORKS OF ART

Paragraph 376	Paragraphs 611, 652–656
Works of Art	Works of Art. (Free List)

REVISED EDITION

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[redacted]

PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for, and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and index" the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report, the Tariff Commission had the services of Guy G. George, of the Commission's staff, and of others.

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WORKS OF ART.

SUMMARY.

The United States is the only great Nation which places an import duty on works of art. However, the act of October 3, 1913, has practically placed art on the free list, as is indicated by the value of imports entered for consumption during recent years. For example, in 1914 works of art to the value of $36,000,000 were entered free of duty and only $700,000 were entered as dutiable. In 1920 works of art valued at $28,000,000 were entered free of duty, while only $525,000 were entered as dutiable.

Paragraph 376 imposes a duty of 15 per cent ad valorem on works of art not specially provided for. This applies in a general way only to those works which are not original works of an artist, ancient art, the production of American artists abroad for use in exhibitions, for religious or educational purposes, and which are not for presentation to public institutions. It will be seen that nearly all art can now be imported under the free list.

Paragraph 376 affords little revenue, which was $78,889 in 1920, and only a little over $100,000 in any year since 1913. Works of art can not be discussed from a tariff viewpoint in the same way that other articles of commerce can. Art seems to be one field in which foreign competition of neither the poor nor the good product is feared, but rather the American artist feels that his own livelihood depends to a great extent upon the free importation and exhibition of works of art, both ancient and contemporary.

The arguments and facts presented in the tariff hearings (1908–1909, pp. 7205 to 7277, and in 1913, pp. 5692 to 5708), together with opinions of artists and directors of galleries recently obtained, lead to the conclusion that no import duty is desired on works of art. The act as it exists at present has not, however, aroused any particular criticism.

Summary table.

FREE.

Year.	Imports for consumption.	Domestic exports.
1910	$19,114,407	$1,065,695
1911	21,045,921	680,506
1912	35,116,931	943,427
1913	51,355,400	818,604
1914	36,027,640	1,415,302
1915	18,921,189	298,321
1916	20,981,637	404,529
1917	23,685,028	395,868
1918	10,987,744	317,711
1918 [1]	8,206,219	341,035
1919 [1]	21,436,947	1,150,015
1920 [1]	28,155,406	1,640,701

[1] Calendar year.

Summary table—Continued.

DUTIABLE.

Year.	Imports for consumption.	Domestic exports.	Amount of duty.	Actual or equivalent ad valorem rate.
				Per cent.
1910	$1,568,780	$1,065,695	$236,191	15.06
1911	1,144,132	680,506	171,611	15.00
1912	987,377	943,427	148,099	15.00
1913	1,355,181	818,604	203,276	15.00
1914	764,936	1,418,302	114,738	15.00
1915	319,844	298,321	47,977	15.00
1916	319,737	404,529	47,961	15.00
1917	266,010	395,868	39,898	15.00
1918	122,086	317,711	18,313	15.00
1918 [1]	76,058	341,035	11,408	15.00
1919 [1]	182,546	1,150,015	27,381	15.00
1920 [1]	525,953	1,640,701	78,889	15.00

[1] Calendar years.

General Information.

1913 TARIFF PARAGRAPHS.

376. Works of art, including paintings in oil or water colors, pastels, pen and ink drawings, or copies, replicas or reproductions of any of the same, statuary, sculptures, or copies, replicas or reproductions thereof, and etchings and engravings, not specially provided for in this section, 15 per cent ad valorem.

611. Statuary and casts of sculpture for use as models or for art educational purposes only; regalia and gems, * * * for the use and by order of any society * * * for religious, philosophical, educational, scientific, or literary purposes, * * * free of duty.

652. Original paintings in oil, mineral, water, or other colors, pastels, original drawings and sketches in pen and ink or pencil and water colors, artists' proof etchings unbound, and engravings and woodcuts unbound, original sculptures or statuary, including not more than two replicas or reproductions of the same; * * * free of duty.

653. Works of art, drawings, engravings, photographic pictures, and philosophical and scientific apparatus brought by professional artists, lecturers, or scientists arriving from abroad for use by them temporarily for exhibition and in illustration, promotion, and encouragement of art, science, or industry in the United States, and not for sale, shall be admitted free of duty, * * *.

654. Works of art, collections in illustration of the progress of the arts, sciences, agriculture, or manufactures, photographs, works in terra cotta, parian, pottery, or porcelain, antiquities and artistic copies thereof in metal or other material, * * * for exhibition * * *, or for a municipal corporation, for the purpose of erecting a public monument, and not intended for sale * * * free of duty.

655. Works of art, productions of American artists residing temporarily abroad, or other works of art, including pictorial paintings on glass, imported expressly for presentation to a national institution or to any State or municipal corporation or incorporated religious society, college, or other public institution, including stained or

painted window glass or stained or painted glass windows imported to be used in houses of worship, * * * free of duty.

656. Works of art (except rugs and carpets), collections in illustration of the progress of the arts, works in * * *, and objects of art * * * which shall have been produced more than 100 years prior to the date of importation, * * * free of duty.

DESCRIPTION.

The various paragraphs of the act of 1913 relating to works of art are comprehensive and easy of administration, since the decisions thereunder have been concerned mainly with the proper classification of articles rather than with construction of the paragraphs themselves. The principal decisions under paragraph 376 relate to works in marble and usually hinge on the point as to whether or not the article in question is a work of art or an article of utility and a manufacture of marble. Other decisions hinge on the words "original" or "copy," and whether certain articles are properly included within the meaning of the paragraph in question.

AMERICAN ART AND THE TARIFF.

(*a*) *Development of American galleries.*—"Fifty years ago there was, I believe, only one public art gallery in America, the Dusseldorf gallery of New York, * * *; and to-day art museums are scattered all over the land, and are multiplying," said Bryan Lathrop, of Chicago, in his remarks before the committee during its hearings of 1908 on this subject. The large cities of the United States contain the principal art collections and galleries, chief among these being New York, Chicago, Boston, and Washington.

It is stated that much more than one-half of the imported art in our public museums has been acquired by the gifts or loans of private collectors. Art can not properly be regarded, therefore, as only the luxury of the rich. The imported paintings in the Metropolitan Museum of New York were valued at $5,000,000 in 1908, four-fifths of which were acquired by gifts or loans of private collectors. Nearly 1,000,000 people yearly visit this museum. It is estimated that one-half of the collection in the Corcoran gallery in Washington, in value, was presented or is loaned by private individuals. Any duty on original works of art would discourage its importation and retard the growth of American galleries. Undoubtedly the past tariff laws have kept out many valuable works of art.[1]

(*b*) *The effect of the tariff on the development of art.*—It is obvious that a tax on art is a tax on education and culture. It limits the number of art objects in the country in either public or private possession, and thus retards the study of the artists and the growth of appreciation of art by the public. The artist himself does not desire a tariff, since by limiting the imports of art he not only suffers to that extent the lack of opportunity to study works of foreign art at home, but the demand for his product is retarded by anything which hinders the growth of public appreciation of art. Protection to the artist is interpreted more as seclusion. Protection can be claimed neither to extend aid to American artists, nor to elevate the American taste for

[1] Tariff hearings, 1908–1909, pp. 7212 to 8210.

fine art. The highest development of art can only be attained through the fullest knowledge of art, both ancient and modern.

(c) *Art and industry.*—The relation of the fine arts to the industries is often not fully appreciated. The development of an artistic taste and skill is of the greatest importance to the manufacturing industries and the trades, in fact, in any field in which the products of form and design play an important part. For instance, art plays a large part in the textile industry, in the wood and metal-working industries, and in architecture and building. The ability to compete successfully with the rest of the world in the finer grades of products depends in no small degree upon maintaining artistic standards comparable with those of other nations.

DOMESTIC EXPORTS.

American exports of works of art go principally to France, Germany, England, Canada, and Italy. The total yearly value of exports before the war was about $1,000,000.

IMPORTS.

Imports into the United States of works of art come mainly from France, Germany, Italy, and England. The average yearly value of "works of art, all other" (dutiable), imported from 1905 to 1909 was somewhat over $4,000,000. The act of 1909 removed the duty on works of art over 20 years old. The value of dutiable works of art dropped to about $600,000 in 1910, while the value of "art works, all other," jumped to $18,000,000 and increased to $50,000,000 in 1913. The importation of "art works, all other," decreased materially during the war, but in 1918 their value was approximately treble that of 1909, the last year before the removal of the duty on art over 20 years old.

TARIFF HISTORY.

The act of 1883 placed a duty of 30 per cent ad valorem on works of art, except certain designated classes for special purposes. The act of 1890 reduced the duty to 15 per cent, while the act of 1894 placed art on the free list. The act of 1897 imposed a duty of 20 per cent, which the act of 1909 reduced to 15 per cent. The act of 1909 inserted the 20-year clause above mentioned, and the act of 1913 dropped this clause.

Imports by countries.

WORKS OF ART, DUTIABLE.

Fiscal years.	France.	Germany.	Italy.	England.	All other.[1]	Total.
1910	$594,021	$133,303	$285,838	$469,163	$218,868	$1,701,193
1911	396,643	150,766	295,517	220,093.	528,148	1,591,167
1912	384,890	103,233	270,705	163,557	119,651	1,042,036
1913	648,177	109,703	288,701	253,087	187,038	1,486,706
1914	275,261	113,655	243,085	110,337	122,903	865,241
1915	38,362	33,091	189,320	34,581	30,195	325,549
1916	36,998	1,026	220,688	49,845	26,477	335,034
1917	22,421	239	185,331	28,868	19,222	256,081
1918	17,797	.....	68,559	23,169	10,305	119,830
1918 [2]	10,735	.....	44,337	14,298	7,529	76,899
1919 [2]	14,187	712	95,837	26,875	13,826	178,437
1920 [2]	.....	.....	.....	.....	.....	527,103

[1] Other important countries exporting to the United States were Netherlands, Austria-Hungary, Spain, Canada, and Japan.
[2] Calendar years.

Imports by countries—Continued.

STATUARY, REGALIA, GEMS, ETC., FOR RELIGIOUS OR EDUCATIONAL PURPOSES, FREE, (FISCAL YEARS).

Imported from—	France.	Germany.	Italy.	England.	All other.[1]	Total.
1910	$105,592	$42,829	$76,435	$11,438	$36,314	$272,608
1911	150,578	70,217	72,787	11,932	47,007	352,521
1912	141,626	34,849	75,943	37,998	56,994	347,410
1913	156,765	79,232	29,579	12,629	46,028	324,233
1914	146,217	89,122	139,131	24,049	46,150	444,669
1915	74,174	41,491	34,086	11,782	35,594	197,127
1916	79,178	10,038	17,739	16,384	31,886	155,225
1917	71,466	131	14,198	8,706	32,376	126,877
1918	73,902	.....	20,507	594	29,031	124,034
1918 [2]	52,993	.....	28,824	2,058	27,229	111,104
1919 [2]	68,750	533	24,585	100,954	44,018	238,840
1920 [2]	.....	.....	.....	.....	.....	307,472

WORKS OF ART, FOR EXHIBITION, PRESENTATION TO PUBLIC INSTITUTIONS, ETC., FREE.

Fiscal years.	France.	Germany.	Italy.	England.	All other.	Total.
1910	$337,995	$54,236	$15,131	$1,702,046	$83,878	$2,193,286
1911	306,375	109,944	32,155	125,335	68,016	641,825
1912	151,519	101,637	243,409	320,442	43,136	860,143
1913	179,191	131,362	195,560	143,206	260,539	909,858
1914	592,835	226,882	153,607	264,711	76,625	1,314,660
1915	75,854	23,564	179,494	90,753	22,822	392,487
1916	24,463	38,015	166,816	116,679	41,055	387,028
1917	22,207	6,311	94,188	85,858	139,861	348,425
1918	636	.....	59,016	26,767	26,582	113,001
1918 [2]	4,096	.....	41,843	56,363	7,829	110,131
1919 [2]	172,070	36,249	59,835	66,379	22,417	356,950
1920 [2]	.....	.....	.....	.....	.....	336,331

WORKS OF ART—THE PRODUCTION OF AMERICAN ARTISTS, FREE.

1910	$465,769	$50,208	$59,964	$140,920	$36,535	$753,396
1911	348,522	36,896	95,016	111,728	48,398	640,560
1912	393,860	27,807	78,948	130,561	169,378	800,554
1913	375,027	31,704	55,787	71,091	106,214	639,823
1914	497,923	13,191	72,435	64,356	113,230	761,135
1915	118,606	856	58,910	8,346	20,261	206,979
1916	162,680	26,500	68,330	23,240	45,382	326,132
1917	42,709	.....	8,191	17,906	68,929	137,735
1918	42,783	.....	15,425	11,855	31,129	101,192
1918 [2]	10,640	.....	12,276	.....	3,351	25,867
1919 [2]	133,425	.....	23,775	24,780	46,805	228,795
1920 [2]	.....	.....	.....	.....	.....	224,591

[1] Other important countries included in "All other" were Switzerland, Canada, and Austria-Hungary.
[2] Calendar years.

Imports by countries—Continued.

ART WORKS—ALL OTHER (ORIGINAL), FREE[1] (FISCAL YEARS).

Imported from—	1910	1911	1912	1913	1914	1915
Austria-Hungary	$44,248	$109,588	$126,181	$47,664	$49,141	$44,650
Belgium	22,884	21,154	44,675	209,086	136,066	8,033
France	8,441,491	10,582,150	16,309,638	21,089,555	21,558,326	7,621,315
Germany	803,032	1,022,594	1,123,048	1,674,944	1,843,597	239,892
Italy	335,035	582,727	391,035	608,424	614,430	837,555
Netherlands	247,037	127,082	151,900	91,812	413,150	137,065
Spain	80,314	158,502	30,160	45,454	57,767	53,611
England	8,245,472	6,785,347	14,879,916	26,355,119	7,720,956	8,033,533
Canada	284,462	533,633	638,153	87,113	275,148	159,644
Brazil	10					43,799
China	17,293	79,750	28,729	127,065	63,027	152,946
Japan	33,123	88,302	103,805	219,570	177,256	110,222
All other	79,730	173,286	422,765	193,302	475,209	500,784
Total	18,634,131	20,264,115	34,250,005	50,749,108	33,384,073	17,943,049

Imported from—	1916	1917	1918[2]
Austria-Hungary	$95	$1,167	
Belgium	14		
France	8,669,064	8,795,922	$3,271,088
Germany	45,774	257	
Italy	2,161,653	1,354,916	1,849,905
Netherlands	269,796	241,921	28,294
Spain	143,645	896,923	160,331
England	6,871,947	9,951,033	3,096,202
Canada	102,477	151,920	385,743
Brazil	1,018,412	175,084	205,214
China	268,655	561,746	457,364
Japan	243,947	367,264	281,646
All other	374,886	507,997	171,969
Total	20,170,365	23,006,150	9,907,756

WORKS OF ART 100 YEARS OLD, FREE (CALENDAR YEARS).

Imported from—	1918[3]	1919	1920
France	$692,993	$8,034,951	
Italy	14,723	609,013	
England	408,598	4,585,028	
China	12,591	248,304	
Hongkong	9,956	1,655	
Japan	5,928	328,965	
All other	10,928	1,315,760	
Total	1,155,817	15,123,676	$20,253,804

WORKS OF ART, ORIGINAL PAINTINGS, STATUARY, ETC. (CALENDAR YEARS).

France	$161,770	$2,274,286	
Italy	25,033	50,775	
Netherlands	23,771	106,532	
Sweden	11,748	42,883	
England	216,460	2,694,986	
Canada	130,098	130,623	
All other	5,930	192,663	
Total	564,810	5,492,748	$7,029,303

[1] Act of Aug. 5, 1909, made original works of art 20 years old or over free of duty. The figure for 1910 covers the fiscal year after that date. The act of Oct. 3, 1913, made original works of art free, with certain limitations.

[2] Separately stated after 1918.

[3] July 1 to Dec. 31, 1918.

Imports for consumption.

WORKS OF ART, COLLECTIONS IN ILLUSTRATION OF THE PROGRESS OF THE ARTS, SCIENCES, OR MANUFACTURES, PHOTOGRAPHS, WORKS IN TERRA COTTA, PARIAN, POTTERY, OR PORCELAIN, ANTIQUITIES, AND ARTISTIC COPIES OF, IN METAL OR OTHER MATERIAL, IMPORTED IN GOOD FAITH FOR EXHIBITION AT A FIXED PLACE, BY ANY STATE, SOCIETY, OR INSTITUTION ESTABLISHED FOR THE ENCOURAGEMENT OF THE ARTS, SCIENCE, AGRICULTURE, OR EDUCATION, OR FOR A MUNICIPAL CORPORATION, AND ALL LIKE ARTICLES IMPORTED IN GOOD FAITH BY ANY SOCIETY OR ASSOCIATION FOR THE PURPOSE OF ERECTING A PUBLIC MONUMENT, AND NOT INTENDED FOR SALE, NOR FOR ANY OTHER PURPOSE THAN HEREIN EXPRESSED.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Average ad valorem rates (per cent).
1908	Free		$728,827			
1909	do		1,148,769			
1910	do		2,415,782			
1911	do		609,002			
1912	do		783,330			
1913	do		853,427			
1914	do		936,642			
1915	do		40,473			
1916	do		147,580			
1917	do		178,985			
1918	do		240,507			
1918 [1]	do		241,737			
1919 [1]	do		84,139			
1920 [1]	do		172,210			
1921 [2]	do		150,282			

WORKS OF ART, INCLUDING PICTORIAL PAINTINGS ON GLASS, INCLUDING STAINED OR PAINTED WINDOW GLASS OR STAINED OR PAINTED GLASS WINDOWS TO BE USED IN HOUSES OF WORSHIP, AND EXCLUDING ANY ARTICLE IN WHOLE OR IN PART MOLDED, CAST, OR MECHANICALLY WROUGHT, FROM METAL WITHIN 20 YEARS PRIOR TO IMPORTATION, IMPORTED EXPRESSLY FOR PRESENTATION TO A NATIONAL INSTITUTION OR TO ANY STATE OR MUNICIPAL CORPORATION, OR INCORPORATED RELIGIOUS SOCIETY, COLLEGE, OR OTHER PUBLIC INSTITUTION.

1908	Free		$27,775			
1909	do		57,671			
1910	do		258,637			
1911	do		229,646			
1912	do		81,257			
1913	do		105,519			
1914	do		287,418			
1915	do		409,749			
1916	do		241,636			
1917	do		170,075			
1918	do		190,341			
1918 [1]	do		92,966			
1919 [1]	do		272,811			
1920 [1]	do		163,921			
1921 [2]	do		127,051			

THE PRODUCTION OF AMERICAN ARTISTS RESIDING TEMPORARILY ABROAD.

1908	Free		$402,194			
1909	do		549,661			
1910	do		661,976			
1911	do		640,974			
1912	do		718,941			
1913	do		559,871			
1914	do		753,041			
1915	do		383,607			
1916	do		303,473			
1917	do		125,459			
1918	do		101,188			
1918 [1]	do		25,863			
1919 [1]	do		228,795			
1920 [1]	do		224,591			
1921 [2]	do		63,486			

[1] Calendar years. [2] Six months ended June 30, 1921.

Imports for consumption—Continued.

PAINTINGS IN OIL, MINERAL, WATER, OR OTHER COLORS, PASTELS, ORIGINAL DRAWINGS AND SKETCHES, ETCHINGS, AND ENGRAVINGS, AND SCULPTURES WHICH HAVE BEEN IN EXISTENCE MORE THAN 20 YEARS PRIOR TO THEIR DATE OF IMPORTATION. (ACT OF 1909.)

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Average ad valorem rates. (per cent).
1910	Free		$12,237,185			
1911	do		10,408,027			
1912	do		14,048,616			
1913	do		11,817,139			
1914	do		2,701,758			

ORIGINAL SCULPTURES OR STATUARY, INCLUDING NOT MORE THAN TWO REPLICAS OR REPRODUCTIONS. (ACT OF 1913.)

1914	Free		$139,518			
1915	do		358,256			
1916	do		147,673			
1917			93,244			
1918	do		61,289			
1918 [1]	do		58,148			
1919 [1]	do		108,964			
1920 [1]	do		171,889			
1921 [2]	do		84,344			

ORIGINAL PAINTINGS IN OIL, MINERAL, WATER, OR OTHER COLORS, PASTELS, ORIGINAL DRAWINGS AND SKETCHES IN PEN-AND-INK OR PENCIL AND WATER COLORS. (ACT OF 1913.)

1914	Free		$8,191,168			
1915	do		4,106,487			
1916	do		4,986,477			
1917	do		3,643,175			
1918	do		1,857,698			
1918 [1]	do		1,579,859			
1919 [1]	do		4,990,905			
1920 [1]	do		6,270,348			
1921 [2]	do		2,316,348			

ARTISTS' PROOF ETCHINGS, UNBOUND ENGRAVINGS, AND WOOD CUTS UNBOUND. (ACT OF 1913.)

1914	Free		$271,097			
1915	do		185,270			
1916	do		157,003			
1917	do		190,357			
1918	do		142,612			
1918 [1]	do		84,151			
1919 [1]	do		392,879			
1920 [1]	do		588,388			
1921 [2]	do		163,079			

STATUARY AND CASTS OF SCULPTURE, FOR USE AS MODELS OR FOR ART EDUCATIONAL PURPOSES ONLY; REGALIA AND GEMS, WHERE SPECIALLY IMPORTED IN GOOD FAITH FOR THE USE AND BY ORDER OF ANY SOCIETY INCORPORATED OR ESTABLISHED SOLELY FOR RELIGIOUS, PHILOSOPHICAL, EDUCATIONAL, SCIENTIFIC, OR LITERARY PURPOSES, OR FOR THE ENCOURAGEMENT OF THE FINE ARTS, OR FOR THE USE AND BY ORDER OF ANY COLLEGE, ACADEMY, SCHOOL, SEMINARY OF LEARNING, ORPHAN ASYLUM, OR PUBLIC HOSPITAL IN THE UNITED STATES, OR ANY STATE OR PUBLIC LIBRARY, AND NOT FOR SALE.

1908	Free		$351,962			
1909	do		334,979			
1910	do		275,921			
1911	do		351,980			
1912	do		345,813			
1913	do		322,362			
1914	do		442,843			
1915	do		199,892			
1916	do		155,556			
1917	do		128,838			
1918	do		125,084			
1918 [1]	do		99,822			
1919 [1]	do		238,840			
1920 [1]	do		307,652			

[1] Calendar years. [2] Six months ended June 30, 1921.

Imports for consumption—Continued.

WORKS OF ART (EXCEPT RUGS AND CARPETS), COLLECTIONS IN ILLUSTRATION OF THE PROGRESS OF THE ARTS, WORKS IN BRONZE, MARBLE, TERRA COTTA, PARIAN, POTTERY, OR PORCELAIN, ARTISTIC ANTIQUITIES AND OBJECTS OF ART OF ORNAMENTAL CHARACTER OR EDUCATIONAL VALUE WHICH HAVE BEEN PRODUCED MORE THAN 100 YEARS PRIOR TO THE DATE OF IMPORTATION. (ACTS OF 1909 AND 1913.)

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Average ad valorem rate. (per cent).
1910	Free		$6,215,243			
1911	do		9,996,918			
1912	do		20,349,373			
1913	do		38,978,450			
1914	do		22,302,626			
1915	do		13,235,390			
1916	do		14,842,227			
1917	do		19,154,895			
1918	do		8,824,910			
1918 [1]	do		6,023,673			
1919 [1]	do		15,119,614			
1920 [1]	do		20,256,347			
1921 [2]	do		5,067,950			

ETCHINGS AND ENGRAVINGS, N. S. P. F. (ACT OF 1913.)

[Under general tariff.]

1914	15 per cent		$11,284	$1,692		15.00
1915	do		14,631	2,194		15.00
1916	do		10,593	1,588		15.00
1917	do		5,994	899		15.00
1918	do		5,680	852		15.00
1918 [1]	do		2,595	389		15.00
1919 [1]	do		7,503	1,125		15.00
1920 [1]	do		23,665	3,549		15.00
1921 [2]	do		1,319	197		15.00

PAINTINGS IN OIL OR WATER COLORS, PASTELS AND PEN-AND-INK DRAWINGS, OR COPIES, REPLICAS, OR REPRODUCTIONS.

1908	20 per cent		$1,947,577	$389,515		20.00
1909	do		888,769	177,753		20.00
1910	do		15,763	3,152		20.00
	15 per cent		1,285,631	192,844		15.00
1911	do		852,963	127,944		15.00
1912	do		753,255	112,988		15.00
1913	do		1,064,081	159,612		15.00
1914	do		340,320	51,048		15.00
			153,647	23,047		15.00
1915	do		107,946	16,191		15.00
1916	do		72,429	10,863		15.00
1917	do		68,226	10,233		15.00
1918	do		42,715	6,407		15.00
1918 [1]	do		29,714	4,457		15.00
1919 [1]	do		62,176	9,326		15.00
1920 [1]	do		229,551	34,432		15.00
1921 [2]	do		63,678	9,551		15.00

[1] Calendar years.
[2] 6 months ended June 30, 1921.

Imports for consumption—Continued.

PAINTINGS IN OIL OR WATER COLORS, PASTELS AND PEN-AND-INK DRAWINGS OR COPIES, REPLICAS, OR REPRODUCTIONS—Continued.

FROM CUBA (RECIPROCITY TREATY, DEC. 27, 1903).

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Average ad valorem rate.
						Per cent.
1908	20 per cent less 20 per cent.		$176	$28		16.00
1909	do		343	54		16.00
1910	15 per cent less 20 per cent.		75	9		12.00
1911	do		274	32		12.00
1912	do		10	1		12.00
1913	do		20	3		12.00
1914	do		75	9		12.00
	do		15	1		12.00
1917	do		85	10		12.00
1918	do		1	12		12.00
1919[1]	do		35	4		12.00
1920[1]	do		75	9		12.00

FROM PHILIPPINE ISLANDS. (ACTS OF MAR. 3, 1905, AUG. 5, 1909, AND OCT. 3, 1913.)

1908	75 per cent of 20 per cent.		$39	$5		15.00
1909	do		49	7		15.00
1910	do		1			15.60
	Free		3			
1911	do		1			
1914	do		216			
1915	do		75			
1916	do		2			
1918	do		22			
1920[1]	do		120			

FROM FRANCE (RECIPROCITY AGREEMENT, JUNE 1, 1898).

1908	15 per cent		$797,555	$119,633		15.00
1909	do		631,093	94,664		15.00

FROM GERMANY (RECIPROCITY AGREEMENT, JULY 13, 1900).

1908	15 per cent		$96,359	$14,453		15.00
1909	do		244,115	36,617		15.00

FROM ITALY (RECIPROCITY AGREEMENT, JULY 18, 1900).

1908	15 per cent		$91,537	$13,730		15.00
1909	do		111,046	16,656		15.00

FROM SPAIN (RECIPROCITY AGREEMENT, SEPT. 1, 1906).

1908	15 per cent		$1,520	$228		15.00
1909	do		13,947	2,092		15.00

[1] Calendar year.

Imports for consumption—Continued.

FROM SWITZERLAND (RECIPROCITY AGREEMENT, JAN. 1, 1906).

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Average ad valorem rate. (per cent).
1908	15 per cent		$1,796	$269		15.00
1909	do		1,079	161		15.00

FROM UNITED KINGDOM (RECIPROCITY AGREEMENT, DEC. 5, 1907).

1908	15 per cent		$83,341	$12,501		15.00
1909	do		573,122	85,968		15.00

DUTY REMITTED (ON ABOVE NO. 96).

1910	For use of foreign diplomatic officers.		$19			
1912	do		48			
1914	do		1,232			
	Sec. IV, J 5, act of Oct. 3, 1913.		50			
1915	For use of foreign diplomatic officers.		1,970			

STATUARY WROUGHT BY HAND, THE PROFESSIONAL PRODUCTION OF A SCULPTOR.

1908	20 per cent		$13,598	$2,720		20.00
1909	do		11,091	2,218		20.00
1910	do		1,821	364		20.00
1910	15 per cent		265,469	39,820		15.00
1911	do		290,869	43,630		15.00
1912	do		234,064	35,109		15.00
1913	do		291,069	43,660		15.00
1914	do		102,654	15,398		15.00

FROM CUBA (RECIPROCITY TREATY, DEC. 27, 1903).

1911	15 per cent less 20 per cent.		$25	$3		12.00

FROM FRANCE (RECIPROCITY AGREEMENT, JUNE 1, 1898).

1908	15 per cent		$27,576	$4,136		15.00
1909	do		18,013	2,701		15.00

FROM ITALY (RECIPROCITY AGREEMENT, JULY 18, 1900).

1908	15 per cent		$225,784	$33,867		15.00
1909	do		190,569	28,585		15.00

FROM GERMANY (RECIPROCITY AGREEMENT, JULY 13, 1900).

1908	15 per cent		$3,305	$495		15.00
1909	do		15,369	2,305		15.00

Imports for consumption—Continued.

FROM PORTUGAL (RECIPROCITY AGREEMENT, JUNE 12, 1900).

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Average ad valorem rate. (per cent).
1908	15 per cent		$10	$1		15.00

FROM SPAIN (RECIPROCITY AGREEMENT, SEPT. 1, 1906).

1908	15 per cent		$33	$4		15.00

FROM SWITZERLAND (RECIPROCITY AGREEMENT, JAN. 1, 1906).

1908	15 per cent		$19	$2		15.00
1909	do		78	11		15.00

FROM UNITED KINGDOM (RECIPROCITY AGREEMENT, DEC. 5, 1907).

1908	15 per cent		$315	$47		15.00
1909	do		966	144		15.00

SCULPTURES OR COPIES, REPLICAS OR REPRODUCTIONS. (ACT OF 1913.)

1914	15 per cent		$156,939	$23,540		15.00
1915	do		197,267	29,590		15.00
1916	do		236,724	35,508		15.00
1917	do		191,680	28,752		15.00
1918	do		73,690	11,053		15.00
1918[1]	do		43,749	6,562		15.00
1919[1]	do		112,832	16,924		15.00
1920[1]	do		272,622	40,893		15.00
1921[2]	do		126,108	18,915		15.00

FROM PHILIPPINE ISLANDS. (ACT OF OCT. 3, 1913.)

1918	Free		$25			

FROM CUBA (RECIPROCITY TREATY, DEC. 27, 1903).

1917	15 per cent less 20 per cent.		$25	$3		12.00
1920[1]	do		40	4		12.00

DUTY REMITTED (ON ABOVE NO. 99).

1914	For use of foreign diplomatic officers.		$30			

[1] Calendar years. [2] 6 months ended June 30, 1921.

Domestic exports (fiscal years).

Exported to—	1910	1911	1912	1913	1914	1915
France	$154,186	$144,208	$453,571	$272,054	$610,404	$68,533
Germany	600,781	83,817	113,509	74,631	121,463	4,533
Italy	34,610	97,647	26,499	36,979	94,496	5,810
England	111,099	151,852	130,957	102,723	284,332	36,976
Canada	118,444	116,655	144,622	137,430	193,586	133,764
Cuba	569	3,102	5,339	10,336	3,691	2,126
All other	46,006	83,225	68,930	184,451	106,830	46,579
Total	1,065,695	680,506	943,427	818,604	1,415,302	298,321

Exported to—	1916	1917	1918	1918 [1]	1919 [1]	1920 [1]
France	$34,025	$72,690	$16,750	$16,750	$170,305	.....
Germany	.....	.....	.....	.....	1,650	.....
Italy	6,598	3,118	935	5,825	25,632	.....
England	43,395	51,070	6,204	6,261	586,365	.....
Canada	175,201	158,779	131,147	122,132	171,853	.....
Cuba	17,127	23,730	56,748	39,278	46,728	.....
All other	128,183	86,481	105,927	50,789	147,482	.....
Total	404,529	395,868	317,711	341,035	1,150,015	$1,640,701

[1] Calendar years.

Rates of duty.

DUTIABLE.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883....	470	Paintings, in oil or water colors, and statuary not otherwise provided for. But the term "statuary," as used in the laws now in force imposing duties on foreign importations, shall be understood to include professional productions of a statuary or of a sculptor only.	30 per centum ad valorem.
1890....	465	Paintings, in oil or water colors, and statuary, not otherwise provided for in this act. But the term "statuary" as herein used shall be understood to include only such statuary as is cut, carved, or otherwise wrought by hand from a solid block or mass of marble, stone, or alabaster, or from metal, and as is the professional production of a statuary or sculptor only.	15 per centum ad valorem.
1894....	575	Paintings, in oil or water colors, original drawings and sketches, and artists' proofs of etchings and engravings, and statuary, not otherwise provided for in this act. But the term "statuary" as herein used shall be understood to include only professional productions, whether round or in relief, in marble, stone, alabaster, wood, or metal, of a statuary or sculptor, and the word "painting," as used in this act, shall not be understood to include such as are made wholly or in part by stenciling or other mechanical process.	Free.
1897....	454	Paintings in oil or water colors, pastels, pen and ink drawings, and statuary, not specially provided for in this act. But the term "statuary" as used in this act shall be understood to include only such statuary as is cut, carved, or otherwise wrought by hand from a solid block or mass of marble, stone, or alabaster, or from metal, and as is the professional production of a statuary or sculptor only.	20 per centum ad valorem.
1909....	470	Paintings in oil or water colors, pastels, pen and ink drawings, and sculptures, not specially provided for in this section. But the term "sculptures" as used in this act shall be understood to include only such as are cut, carved, or otherwise wrought by hand from a solid block or mass of marble, stone, or alabaster, or from metal, and as are the professional production of a sculptor only, and the term "painting" as used in this act shall be understood not to include such as are made wholly or in part by stenciling or other mechanical process.	15 per centum ad valorem.
1913....	376	Works of art, including paintings in oil or water colors, pastels, pen and ink drawings, or copies, replicas, or reproductions of any of the same, statuary, sculptures, or copies, replicas, or reproductions thereof, and etchings and engravings, not specially provided for in this section.	Do.

Rates of duty—Continued.

DUTIABLE—Continued.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883....	771	Regalia and gems, statues, statuary, and specimens of sculpture, where specially imported in good faith for the use of any society incorporated or established for philosophical, literary, or religious purposes, or for the encouragement of the fine arts, or for the use or by order of any college, academy, school, seminary of learning, or public library in the United States.	Free.
1890....	692	Regalia and gems, statues, statuary, and specimens of sculpture where specially imported in good faith for the use of any society incorporated or established solely for educational, philosophical, literary, or religious purposes, or for the encouragement of fine arts, or for the use or by order of any college, academy, school, seminary of learning, or public library in the United States; but the term "regalia" as herein used shall be held to embrace only such insignia of rank or office or emblems as may be worn upon the person or borne in the hand during public exercises of the society or institution, and shall not include articles of furniture or fixtures, or of regular wearing apparel, nor personal property of individuals.	Do.
1894....	603	Regalia and gems, statues, statuary, and specimens or casts of sculptures where specially imported in good faith for the use of any society incorporated or established solely for educational, philosophical, literary, or religious purposes, or for the encouragement of fine arts, or for the use or by order of any college, academy, school, seminary of learning, or public library in the United States; but the term "regalia" as herein used shall be held to embrace only such insignia of rank or office or emblems as may be worn upon the person or borne in the hand during public exercises of the society or institution, and shall not include articles of furniture or fixtures, or of regular wearing apparel, nor personal property of individuals.	Do.
1897....	649	Regalia and gems, statuary, and specimens or casts of sculpture, where specially imported in good faith for the use and by order of any society incorporated or established solely for religious, philosophical, educational, scientific, or literary purposes, or for the encouragement of the fine arts, or for the use and by order of any college, academy, school, or seminary of learning in the United States, or any State or public library, and not for sale; but the term "regalia" as herein used shall be held to embrace only such insignia of rank or office or emblems as may be worn upon the person or borne in the hand during public exercises of the society or institution, and shall not include articles of furniture or fixtures, or of regular wearing apparel, nor personal property of individuals.	Do.
1909....	661	Statuary and casts of sculpture for use as models or for art educational purposes only; regalia and gems, where specially imported in good faith for the use and by order of any society incorporated or established solely for religious, philosophical, educational, scientific, or literary purposes, or for the encouragement of the fine arts, or for the use and by order of any college, academy, school, seminary of learning, orphan asylum, or public hospital in the United States, or any State or public library, and not for sale, subject to such regulations as the Secretary of the Treasury shall prescribe; but the term "regalia" as herein used shall be held to embrace only such insignia of rank or office or emblems as may be worn upon the person or borne in the hand during public exercises of the society or institution, and shall not include articles of furniture or fixtures, orof regular wearing apparel, nor personal property of individuals.	Do.
1913....	611	Statuary and casts of sculpture for use as models or for art educational purposes only; regalia and gems, where specially imported in good faith for the use and by order of any society incorporated or established solely for religious, philosohpical, educational, scientific, or literary purposes, or for the encouragement of the fine arts, or for the use and by order of any college, academy, school, seminary of learning, orphan asylum, or public hospital in the United States, or any State, or public library, and not for sale, subject to such regulations as the Secretary of the Treasury shall prescribe; but the term "regalia" as herein used shall be held to embrace only such insignia of rank or office or emblems as may be worn upon the person or borne in the hand during public exercises of the society or institution, and shall not include articles of furniture or fixtures, or of regular wearing apparel, nor personal property of individuals.	Do

Rates of duty—Continued.

DUTIABLE—Continued.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1909....	717	Works of art, including paintings in oil, mineral, water, or other colors, pastels, original drawings, and sketches, etchings and engravings, and sculptures, which are proved to the satisfaction of the Secretary of the Treasury under rules prescribed by him to have been in existence more than 20 years prior to the date of their importation, but the term "sculptures" as herein used shall be understood to include professional productions of sculptors only, whether round or in relief, in bronze, marble, stone, terra cotta, ivory, wood, or metal; and the word "painting," as used in this act, shall not be understood to include any article of utility nor such as are made wholly or in part by stenciling or any other mechanical process; and the words "etchings" and "engravings," as used in this act, shall be understood to include only such as are printed by hand from plates or blocks etched or engraved with hand tools, and not such as are printed from plates or blocks etched or engraved by photochemical processes. * * *	Free.
1913....	652	Original paintings in oil, mineral, water, or other colors, pastels, original drawings and sketches in pen and ink or pencil and water colors, artists' proof etchings unbound, and engravings and wood cuts unbound, original sculptures or statuary, including not more than two replicas or reproductions of the same; but the terms "sculpture" and "statuary" as used in this paragraph shall be understood to include professional productions of sculptors only, whether in round or in relief, in bronze, marble, stone, terra cotta, ivory, wood, or metal, or whether cut, carved, or otherwise wrought by hand from the solid block or mass of marble, stone, or alabastar, or from metal, or cast in bronze or other metal or substance, or from wax or plaster, made as the professional productions of sculptors only; and the words "painting" and "sculpture" and "statuary" as used in this paragraph shall not be understood to include any articles of utility, nor such as are made wholly or in part by stenciling or any other mechanical process; and the words "etchings," "engravings," and "woodcuts" as used in this paragraph shall be understood to include only such as are printed by hand from plates or blocks etched or engraved with hand tools, and not such as are printed from plates or blocks etched or engraved by photochemical or other mechanical processes.	Do.
1883....	2508	All paintings, statuary, and photographic pictures imported into the United States for exhibition by any association duly authorized under the laws of the United States, or of any State, for the promotion and encouragement of science, art, or industry, and not intended for sale, shall be admitted free of duty, under such regulations as the Secretary of the Treasury shall prescribe. But bonds shall be given for the payment to the United States of such duties as may be imposed by law upon any and all of such articles as shall not be reexported within six months after such importation.	Do.
1890....	758	Works of art, drawings, engravings, photographic pictures, and philosophical and scientific apparatus brought by professional artists, lecturers, or scientists arriving from abroad for use by them temporarily for exhibition and in illustration, promotion, and encouragement of art, science, or industry in the United States, and not for sale, and photographic pictures, paintings, and statuary, imported for exhibition by any association established in good faith and duly authorized under the laws of the United States, or of any State, expressly and solely for the promotion and encouragement of science, art, or industry, and not intended for sale, shall be admitted free of duty, under such regulations as the Secretary of the Treasury shall prescribe; but bonds shall be given for the payment to the United States of such duties as may be imposed by law upon any and all of such articles as shall not be exported within six months after such importation: *Provided*, That the Secretary of the Treasury may, in his discretion, extend such period for a further term of six months in cases where applications therefor shall be made.	Do.
1894....	687	Same as act of 1890, except that the words "paintings, and statuary," are deleted.	Do.
1897....	701	Works of art, drawings, engravings, photographic pictures, and philosophical and scientific apparatus brought by professional artists, lecturers, or scientists arriving from abroad for use by them temporarily for exhibition and in illustration, promotion, and encouragement of art, science, or industry in the United States, and not for sale, shall be admitted free of duty, under such regulations as the Secretary of the Treasury shall prescribe; but bonds shall be given for the payment to the United States of such duties as may be imposed by law upon any and all such articles as shall not be exported within six months after such importation: *Provided*, That the Secretary of the Treasury may, in his discretion, extend such period for a further term of six months in cases where applications therefor shall be made.	Do.

Rates of duty—Continued.

DUTIABLE—Continued.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1909....	714	Same as act of 1897	Free.
1913....	653	....do	Do.
1883....	2509	All works of art, collections in illustration of the progress of the arts, science, or manufactures, photographs, works in terra-cotta, parian, pottery, or porcelain, and artistic copies of antiquities in metal or other material, hereafter imported in good faith for permanent exhibition at a fixed place by any society or institution established for the encouragement of the arts or science, and not intended for sale, nor for any other purpose than is hereinbefore expressed, and all such articles, imported as aforesaid, now in bond, and all like articles imported in good faith by any society or association for the purpose of erecting a public monument, and not for sale, shall be admitted free of duty, under such regulations as the Secretary of the Treasury may prescribe: *Provided*, That the parties importing articles as aforesaid shall be required to give bonds, with sufficient sureties, under such rules and regulations as the Secretary of the Treasury may prescribe, for the payment of lawful duties which may accrue should any of the articles aforesaid be sold, transferred, or used contrary to the provisions and intent of this act.	Do.
1890....	759	Works of art, collections in illustration of the progress of the arts, science, or manufactures, photographs, works in terra-cotta, parian, pottery, or porcelain, and artistic copies of antiquities in metal or other material hereafter imported in good faith for permanent exhibition at a fixed place by any society or institution established for the encouragement of the arts or of science, and all like articles imported in good faith by any society or association for the purpose of erecting a public monument, and not intended for sale, nor for any other purpose than herein expressed; but bonds shall be given under such rules and regulations as the Secretary of the Treasury may prescribe, for the payment of lawful duties which may accrue should any of the articles aforesaid be sold, transferred, or used contrary to this provision, and such articles shall be subject, at any time, to examination and inspection by the proper officers of the customs: *Provided*, That the privileges of this and the preceding section shall not be allowed to associations or corporations engaged in or connected with business of a private or commercial character.	Do.
1894....	688	Same as act of 1890	Do.
1897....	702	Works of art, collections in illustration of the progress of the arts, sciences, or manufactures, photographs, works in terra-cotta, parian, pottery, or porcelain, antiquities, and artistic copies thereof in metal or other material, imported in good faith for exhibition at a fixed place by any State or by any society or institution established for the encouragement of the arts, science, or education, or for a municipal corporation, and all like articles imported in good faith by any society or association, or for a municipal corporation for the purpose of erecting a public monument, and not intended for sale, nor for any other purpose than herein expressed; but bonds shall be given under such rules and regulations as the Secretary of the Treasury may prescribe, for the payment of lawful duties which may accrue should any of the articles aforesaid be sold, transferred, or used contrary to this provision, and such articles shall be subject, at any time, to examination and inspection by the proper officers of the customs: *Provided*, That the privileges of this and the preceding section shall not be allowed to associations or corporations engaged in or connected with business of a private or commercial character.	Do.
1909....	715	Same as act of 1897	Do.
1913....	654	Works of art, collections in illustration of the progress of the arts, sciences, agriculture, or manufactures, photographs, works in terra cotta, parian, pottery, or porcelain, antiquities and artistic copies thereof in metal or other material, imported in good faith for exhibition at a fixed place by any State or by any society or institution established for the encouragement of the arts, science, agriculture, or education, or for a municipal corporation, and all like articles imported in good faith by any society or association, or for a municipal corporation, for the purpose of erecting a public monument, and not intended for sale nor for any other purpose than herein expressed; but bond shall be given under such rules and regulations as the Secretary of the Treasury may prescribe, for the payment of lawful duties which may accrue should any of the articles aforesaid be sold, transferred, or used contrary to this provision, and such articles shall be subject, at any time, to examination and inspection by the proper officers of the customs: *Provided* That the privileges of this and the preceding paragraph shall not be allowed to associations or corporations engaged in or connected with business of a private or commercial character.	Do.

Rates of duty—Continued.

DUTIABLE—Continued.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1913	399	Works of art, painting, statuary, frescoes, and other works of art, the production of American artists. But the fact of such production must be verified by the certificate of a consul or minister of the United States authorized upon the written declaration of the artist: paintings, statuary, frescoes, and other works of art, imported expressly for presentation to national institutions, or to any State, or to any municipal corporation, or religious corporation or society.	Free.
1909	25	Works of art, the production of American artists residing temporarily abroad, or other works of art, including pictorial paintings on glass, imported expressly for presentation to a national institution, or to any State or municipal corporation or incorporated religious society, college, or other public institution, except stained or painted window glass or stained or painted glass windows; but such exemption shall be subject to such regulations as the Secretary of the Treasury may prescribe.	Do.
1894	616	Same as act of 1890 with substitution of the word "including" for the word "except" following "other public institution."	
1897	208	Same as act of 1894.	
1909	728	Works of art, productions of American artists residing temporarily abroad, or other works of art, including pictorial paintings on glass, imported expressly for presentation to a national institution, or to any State or municipal corporation, or incorporated religious society, college, or other public institution, except stained or painted window glass or stained or painted glass windows, and except any article, or whole or any part, molded, cast, or mechanically wrought from metal, within 20 years prior to importation; but such exemption shall be subject to such regulations as the Secretary of the Treasury may prescribe.	Do.
1913	655	Works of art, productions of American artists residing temporarily abroad, or other works of art, including pictorial paintings on glass, imported expressly for presentation to a national institution, or to any State or municipal corporation, or incorporated religious society, college, or other public institution, including stained or painted window glass or stained or painted glass windows imported to be used in houses of worship, and excepting any article, or whole or any part, molded, cast, or mechanically wrought from metal, within 20 years prior to importation; but such exemption shall be subject to such regulations as the Secretary of the Treasury may prescribe.	Do.
1909	111	* * * works of art, except rugs and carpets, collections illustrative of the progress of the arts, works in bronze, marble, terra cotta, parian, pottery, or porcelain, artistic architectural and scientific works of architectural character or scientific value which shall have been produced more than 20 years prior to the date of importation, but the free importation of such objects shall be subject to such restrictions as to proof of antiquity as the Secretary of the Treasury may prescribe.	Do.
1913	658	Same as act of 1909	Do.

Court and Treasury Decisions.

Paragraph 376: A bronze statue cast in a foundry by artisans from a model made in some plastic material by an artist, but upon which the artist did little or no retouching, was held not "statuary wrought by hand from metal" within the meaning of paragraph 454 of the act of 1897, but dutiable as a manufacture of metal under paragraph 193. Altman v. United States, 224 U. S., 583, of 1912.

To constitute "sculptures" under the act of 1909, the evidence had to show that the articles were cut, carved, or otherwise wrought by hand from solid blocks or masses of marble and that they were severally the professional productions of a sculptor. Downing v. United States, 3 Ct. Cust. Appls., 473, of 1912.

Under the act of 1913 "statuary" and "sculptures" are interchangeable terms. United States v. Masson, 3 Ct. Cust. Appls.,

168, of 1912, holding an artistic statue of gold bronze and ivory to be sculpture; United States *v.* Olivotti & Co., 7 Ct. Cust. Appls., 46, of 1916.)

"Works of art" within paragraph 376 does not cover the whole range of the beautiful and artistic, but only those productions of the artist which are something more than ornamental and decorative, and which may be properly ranked as examples of the free fine arts or possibly that class only of the free fine arts imitative of natural objects as the artist sees them and appealing to the emotions through the eye alone. "Sculpture" as an art is that branch of the free fine arts which chisels or carves out of stone or other solid material or models in clay or other plastic substances for subsequent reproduction by carving or casting imitations of natural objects, chiefly the human form, and represents such objects in their true proportions of length, breadth, and thickness, or of length and breadth only.

A work is not necessarily sculpture because artistic and beautiful and fashioned by a sculptor from solid marble. Utilitarian articles do not become sculpture by reason of being adorned by the carving of a sculptor unless the sculptural decorations be so compelling that the utilitarian achievement of the artisan is lost in the realized sentiment of the artist. A marble font and marble settee, the work of a sculptor, and incidentally embellished by him with artistic carvings, are not sculpture or works of art within this paragraph, but manufactures of marble under paragraph 98. (United States *v.* Olivotti, 7 Ct. Cust. Appls., 46, of 1916.)

Neither the tariff act of 1913 nor this paragraph thereof limits the definition of the word "sculptures" as used in said paragraph and the word must be given the meaning ascribed to it in common understanding. A *copy, replica, or reproduction* under this paragraph must possess the same qualities or charactersitics and must be made by a professional sculptor or under his supervision. The history of this legislation shows that Congress did not intend by enacting this paragraph as new legislation to lower the standard of work necessary to constitute sculpture or to dispense with the requirement that such work must be produced by or under the supervision of a sculptor, thereby admitting at a low rate of duty the commercial productions of artisans because of characteristics rendering them attractive, ornamental, or beautiful. *Marble parts of a temple* designed as an ornament for a yard or a garden, which are embellished or ornamented with more or less elaborately cut or carved representations of various kinds, there being no claim that they are the professional production of a sculptor, are dutiable as manufactures of marble under paragraph 98 and not under this paragraph as works of art or sculpture. If these parts are not sculpture it follows that they are not works of art under this paragraph. Having denied classification as works of art to the parts of this temple, the court refused to classify the whole temple as a work of art. (United States *v.* Downing, 6 Ct. Cust. Appls., 545, of 1916.)

Articles of utility and articles made wholly or in part by mechanical processes were held to come within paragraph 376 of the act of 1913, if they fall within the category of "works of art" as the term is broadly applied. (Dept. Order, T. D. 34438. of 1914.)

Paragraph 611: Plaster statuary, the professional production of a sculptor, but not original, and suitable for use only as a model, was

held free of duty under this paragraph rather than dutiable as manufactures of plaster of Paris under paragraph 369. (Abstract 42185, of 1918.)

Plaster of Paris casts of sculpture, imported for use as matrices from which to mold reproductions, are models within the meaning of this paragraph granting free entry to "statuary and casts of sculpture for use as models or for art educational purposes." (G. A. 7632, T. D. 34905, of 1914.)

Curtains and draperies for use on or about an altar of a church, classified under paragraph 358, were held not to be free of duty as regalia under this paragraph, nor as works of art under paragraph 655. (Abstract 37203, of 1915.)

A censer, benitier, and pair of burettes, the only articles in the importation carried in the hand during the services of the church for which they were imported, were held free of duty as regalia under paragraph 661 of the act of 1909. The protest was overruled as to all other items in the importation. (Abstract 26391, T. D. 31832, of 1911.)

The right of free entry of regalia can not be abridged by administrative regulations, and a regulation requiring that proof should be produced at the time of entry was held not to make dutiable regalia shown by evidence offered to the collector before liquidation to be within paragraph 649 of the act of 1897. (Siegman *v.* United States, 141 Fed. 491, of 1905.)

Funeral palls used to decorate or place over the casket in church at a funeral and carried to and from the casket by hand, often folded into a small bundle for convenience, were held not to come within paragraph 611 of the act of 1913. (Abstract 43704, of 1920, following Abstract 35806, T. D. 34548, of 1914.)

ORIGINAL WORKS OF ART.

Where *paintings* have been admitted free of duty, the frames on these, when framed, have, by a long course of practice in the customs, recognized by law, been dutiable, and where paintings are dutiable and are imported in frames these frames are not integral parts of the pictures and can not be deemed containers either in themselves or by the rule ejusdem generis. The pictures and the frames are separable for tariff purposes. (Kunfeld *v.* United States, 5 Ct. Cust. Appls., 222, of 1914.) *Pen and ink or pencil drawings* colored with water colors, made on paper by artists working under direction of a master artist, used as originals for making plates to illustrate women's wearing apparel in dress catalogues and magazines, are classable as "original drawings and sketches in pen and ink or pencil and water colors" under this paragraph and not dutiable as manufactures of paper. A sketch or drawing is not taken outside the meaning of the word "original" in this paragraph by the fact that it is the result of the combined concurrent efforts of several artists. The provision in this paragraph for "original drawings and sketches in pen and ink or pencil and water colors" is narrower than the provision in the same paragraph for "original paintings in * * * water, or other colors." (9 Ct. Cust. Appls., T. D. 38046, of 1919.) An appeal is pending from Abstract 43063, of 1919, involving a somewhat similar issue. *Pen and wash drawings* were held entitled to free

entry as original drawings under this paragraph. (Abstract 37944, of 1915.) *Chinese water color paintings bound in book form* were found to be original paintings and works of art and held free under this paragraph. (Abstract 42334, of 1918.) The provision for "statuary * * * wrought by hand * * * from metal" in paragraph 454 of the act of 1897 does not include a bronze statue cast in a foundry by artisans from a model that was made in plastic material by an artist, but upon which he did but little or no retouching. (224 U. S., 583, of 1912.) Among articles excluded from the paragraph are: *Parts of fountains* in the shape of two bronze figures cast by the cire-perdue process from metals made by professional sculptors and the castings finished by professional sculptors, held dutiable under paragraph 376, they not being shown to be originals or first or second replicas within the meaning of this paragraph (G. A. 8196, T. D. 37785, of 1918); and *marble statues* executed by professional sculptors from sketches or photographs furnished to them, though artistic and considered works of art, not being original sculptures within this paragraph, since sculpture to be original must be the work of the artist from its conception or creation in the mind of the artist until its completion in its material form (G. A. 8220, T. D. 37863, of 1918). *A portrait done in oil which was a copy or replica* of a portrait by the same painter, it being held to be not an original painting in oil but a copy, replica, or reproduction, and the paragraph providing for original paintings only (G. A. 7199, T. D. 37792, of 1918), and *oil paintings in the form of panels* of various sizes intended for the decoration of a wall of a room, held not to be originals (Abstract 42612, of 1918), were held dutiable under paragraph 376 as works of art. A *marble bench* with base and top of single pieces of slabs or marble, as an original sculpture to be free under the paragraph must also be a work of art (G. A. 8134, T. D. 37514, of 1918), and small *marble busts and statuettes* produced in a commercial way (Abstract 42613, of 1918) were held dutiable as manufactures of marble or of alabaster. A *bronze statue* cast by the cire-perdue process from an original model made in terra cotta by Rodin, the casting being carved, remodeled, and improved by the artist, was held free of duty under this paragraph as an original sculpture cast in bronze and the professional production of a sculptor. (G. A. 8229, T. D. 37898, of 1919.) Vases, plaques, and ornaments, mineral painted, the original work of an artist, and having no utilitarian purposes, are free of duty under this paragraph as paintings in mineral colors. "Mechanical process" should be interpreted under the rule of ejusdem generis as relating to a mechanical process of like kind as stenciling, that is to say, a process for producing the representation or artistic effect and not a process for fixing more permanently the production of the artist. "Firing" of a painting on earthenware is not a "mechanical process" within the meaning of the paragraph. (Wells Fargo *v.* United States, 8 Ct. Cust. Appls., 125, of 1917.)

Original sketches in pen and ink or pencil and water colors were held exempt from duty under paragraph 652 of the act of 1913, although the water colors were laid on with a brush and such sketches may be articles of utility. (G. A. 8331, T. D. 38368, of 1920.)

Drawings and sketches are entitled to free entry under paragraph 652 only when they are (1) originals and (2) when the colors thereon

have been made with water colors. Such drawings may be sketched with pen and ink or with pencil; they must, however, also contain color produced by water color; hence, pencil drawings or sketches on paper of patterns and designs intended to be used in lace making are excluded from said provision because merely pencil drawings containing no water colors. (G. A. 8371, T. D. 38501, of 1920.)

WORKS OF ART FOR PUBLIC COLLECTIONS, ETC.

When *pictures* are admitted free of duty under bond for exhibition, the frames are also entitled to free entry. (T. D. 33728, of 1913.) *Furniture*, imported by the Ohio State Archæological and Historical Society, for permanent exhibition at the home of the late President Hayes at Fremont, Ohio, was held not to be free of duty under this paragraph. The home was deeded to the State of Ohio, with a life estate reserved to President Hayes's children and grandchildren, in whose possession it was being used as a private residence and not open to the public. (G. A. 8259, T. D. 38030, of 1919.) The principal purpose of the *Olympic Club* is to encourage athletics, and to do this a regular corps of teachers is employed to give systematic physical instruction. Such an institution is engaged in educational work and a *statue artistic in character*, imported for exhibition in the club, was held to fall within the terms of paragraph 715 of the act of 1909, and entitled to free entry. (United States *v.* Olympic Club, 5 Ct. Cust. Appls., 251, of 1914.)

Articles imported for exhibition in the Red Cross Museum are exempt under paragraph 654 of the act of 1913. (T. D. 38320, of 1920.)

An importation made by a contracting company who received pay for the same from a general fund made up of contributions can not be said to have been imported expressly for presentation. Parts of an altar, even though produced by a professional sculptor, which require changes and extensive and elaborate work and material from domestic sources to complete the altar, can not be said to be works of art as imported. A Roman Catholic church organized primarily for religious service has been held by the Board of General Appraisers not to be an educational institution within the meaning of paragraph 654 of the act of 1913. (G. A. 8360, T. D. 38465.) An appeal is pending in the Court of Customs Appeals.

WORKS OF ART THE WORK OF UNITED STATES CITIZENS AND STAINED GLASS WINDOWS FOR PRESENTATION.

The legislative history of that portion of this paragraph that relates to *painted or stained glass windows* shows clearly, and the language itself must be taken to show, that it is a complete and independent provision in no wise modified or affected by the clause of exclusion in the paragraph. Houses of worship are those designated as beneficiaries in importing free of duty painted or stained glass windows, and they are so entitled whether incorporated or not. (Perry *v.* United States, 6 Ct. Cust. Appls., 201, of 1915.) *Pieces of painted or stained glass*, intended for use in repairing painted or stained glass windows already in churches, are not dutiable under the provision of paragraph 95 for "stained or painted glass windows, or

parts thereof," but are free of duty under this paragraph as "stained or painted window glass * * * imported to be used in houses of worship." (G. A. 8005, T. D. 36893, of 1916.) *Stained glass panels*, 2 feet long and 1 foot wide, imported for presentation to Wellesley College, are not entitled to free entry under this paragraph as "works of art * * * including pictorial paintings on glass, imported expressly for presentation to a * * * college." (G. A. 7856, T. D. 36165, of 1916.)

ANTIQUITIES.

Article 395 of the Customs Regulations of 1915, providing that the importer of antiquities shall furnish a certificate stating from whom the merchandise was acquired and the date of its acquisition, is reasonable. A certificate stating that antiquities were acquired "from various persons" on different dates of the years 1914 and 1915 is not a compliance therewith. (United States *v.* Tsai, 9 Ct. Cust. Appls., 42, of 1919.)

Chairs, upholstered in tapestry, classified as manufactures in part of wool, claimed to be free as artistic antiquities as to the upholstery, were held not separable for dutiable purposes. (Abstract 38885, of 1915, following G. A. 7203, T. D. 31492, of 1911.) The Treasury Department has held that when articles are composed in *part of artistic antiquities* and in *part of modern portions* not rendering them works of art, such parts, when capable of being appraised and reported on separately, are to be treated separately for classification purposes. (T. D. 37394, of 1917.) Since this decision the rulings have not been entirely uniform; as *table spreads, centerpieces, and other articles made of lace and embroidery*, partly antique and partly modern, were held not separable so as to permit the antique portion to be admitted free of duty (G. A. 8115, T. D. 37446, of 1917); also *pillow slips* or *covers* made principally of silk with embroidered and gold lace decorations, the embroidered silk in the face of the article being over 100 years old and the gold lace and fringe modern, were held, as imported, not to be an artistic antiquity (Abstract 43306, of 1919). But as to an importation of certain *portions of the walls of a room* taken from an old house in England (Kilburn Grange), claimed to be made in the time of Charles the Second, together with certain modern additions and restorations, returned as an entirety, it was held that the modern additions and restorations are dutiable and the balance free as antiques (Abstract 42942, of 1919); and *modern wooden settees and antique tapestry covers* cut and shaped to fit the frames of the settees, but not attached thereto, itemized separately on the same invoice, were held not entireties and to be treated separately, the settees dutiable as furniture and the antique tapestries free under this paragraph (G. A. 8285, T. D. 38109, of 1919). In another case under this paragraph various articles of furniture, some of which had been repaired, among other ways with replacement of parts, such as new legs, were held exempt from duty as having been "produced more than 100 years prior to the date of importation." (United States *v.* Shallus, 7 Ct. Cust. Appls., 314, of 1917.) *Parts of a house* imported to be used in the construction of another house in this country, though antique and the house in its original surroundings interesting and possibly artistic,

were held not free under this paragraph. (G. A. 8114, T. D. 37435, of 1917.)

Porcelain vases, candlesticks, and lamps, classified as articles of decorated china, chief value, at 55 per cent ad valorem under paragraph 80 of the act of 1913, were classified as follows: Bowls and vases, with metal attachments intended to make them look like or useful as lamps or like fixtures, all of the porcelain and decorated china being admittedly artistic and made 100 years before importation, with the metal parts invoiced and packed separately, were held separable for duty purposes; the porcelain part was held free of duty, and the metal part as manufactures of metal. (Abstract 43556, of 1920.)

Tapestry which was originally the border of a hanging and had been made into furniture covers has lost its identity as an antiquity by the addition of new material; and labor and velvet, although admittedly more than 100 years old, which had been artistically embroidered, has also lost its identity as an antique. Free entry under paragraph 656 was denied. (Abstract 43673.)

A room consisting of four walls constructed in the main of antique material, but not shown to have existed in the form imported as a room 100 years previous to importation, was held not exempt from duty under paragraph 656. (G. A. 8335, T. D. 38383, of 1920.)

Screens composed of wood frames and silk, the most part of the silk being artistic and antique and consisting of silk trimmings, are not free under paragraph 656 nor dutiable under paragraph 318 as articles composed in chief value of silk, but are dutiable as articles made in whole or in part of trimmings under paragraph 358. (G. A. 8340, T. D. 38412, of 1920.)

A rate of duty sufficient to reimburse the Government for the heavy expenses incurred might be advisable if duty for revenue should not be imposed upon the articles enumerated in this paragraph. Apart from the work in the collector's office, 8 to 10 examiners and from 25 to 30 employees at New York devote a large part of their time to the examination of such importations. Every importation has to be examined in its entirety, and occasionally experts are called in to assist the examiners in determining the question of antiquity.

A definite date instead of 100 years might be inserted in the law: 1820 would be especially appropriate for furniture and might be applied also to other articles enumerated in the paragraph.

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UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPHS 373, 374, AND 375 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

MUSICAL INSTRUMENTS AND PHONOGRAPHS

Paragraph 373:
Musical Instruments
Violins

Paragraph 374:
Phonographs, Gramophones, and Similar Articles

Paragraph 375:
Violin Rosin (For treatment, see par. 635.)

REVISED EDITION

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and Index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for, and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and Index" the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Guy G. George and Charles F. Yauch, of the Commission's staff, and of others.

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VIOLIN ROSIN.

[For treatment, see par. 635.]

MUSICAL INSTRUMENTS AND PHONOGRAPHS.

SUMMARY.

The musical instrument industry in the United States has developed mainly since 1850. The essential and distinctive features of the modern piano were introduced in the United States, and the reed organ is almost wholly an American product. The phonograph was invented and developed in the United States.

The value of the products of the industry in 1849 was about $2,000,000, and in 1914 the total value of the products of the musical instrument industry, including phonographs, was approximately $120,000,000. Nearly 50,000 wage earners were employed in 1914 and 326,274 pianos, 42,806 organs, and 514,154 phonographs were produced. There were 737 establishments engaged in the industry, capitalized at a total of about $170,000,000. The States of New York and Illinois produced 59.4 per cent of the total value of pianos and organs in 1914, while New Jersey was by far the leading State in the manufacture of phonographs.

Foreign competition in the case of pianos, organs, and phonographs has been almost negligible. Imports have been mainly supplementary rather than competitive in the past. The native wood used in the American piano is said to be one of its great permanent advantages. In the foreign market only the high-grade American piano or phonograph can be sold in competition with other makes, but the American reed organ is sold very extensively in all parts of the world. When the sale of a piano or phonograph depends mainly upon the price rather than upon the quality, the foreign instrument almost invariably finds a more ready sale than the American.

The tariff rate on musical instruments was 45 per cent ad valorem from 1897 until 1913, when it was reduced to 35 per cent.

Summary table.

MUSICAL INSTRUMENTS AND PARTS OF.

	Domestic production.	Imports for consumption.[1]	Domestic exports.	Ratio to production (per cent).	
				Imports.	Exports.
Fiscal year:					
1910	$93,017,652	$1,365,768	$3,182,343	1.5	3.4
1911	.....	1,568,187	3,471,401	.....	.....
1912	.....	1,526,421	3,606,936	.....	.....
1913	.....	1,738,824	3,799,731	.....	.....
1914	92,572,312	1,967,678	3,358,631	2.1	3.6
1915	.....	1,153,821	2,048,715	.....	.....
1916	.....	652,448	3,454,064	.....	.....
1917	.....	518,478	4,142,896	.....	.....
1918	.....	666,057	4,915,299	.....	.....
Calendar year:					
1918	.....	507,237	4,675,694	.....	.....
1919	.....	1,281,018	6,883,963	.....	.....
1920	.....	2,564,902	11,848,567	.....	.....
1921[2]	.....	1,450,204	.....	.....	.....

[1] Includes steel or other metal strings for musical instruments.
[2] 6 months ended June 30, 1921.

Summary table—Continued.

MUSICAL INSTRUMENTS AND PARTS OF—Continued.

	Value (imports for consumption).[1]	Amount of duty.	Value per unit of quantity.	Actual or equivalent ad valorem rate.
Fiscal year:				
1910	$1,365,768	$614,596	.....	45
1911	1,568,187	705,684	.....	45
1912	1,526,421	686,890	.....	45
1913	1,738,824	782,471	.....	45
1914 [2]	384,263	172,919	.....	45
1914 [3]	1,583,415	554,195	.....	35
1915	1,153,821	403,837	.....	35
1916	652,448	228,357	.....	35
1917	518,478	181,467	.....	35
1918	666,057	233,120	.....	35
Calendar year:				
1918	507,237	177,533	.....	35
1919	1,281,018	448,356	.....	35
1920	2,564,902	897,748	.....	35
1921 [2]	1,450,204	507,571	.....	35

PHONOGRAPHS, ETC.

	Domestic production.	Imports for consumption.	Domestic exports.	Ratio to production (per cent).	
				Imports.	Exports.
Fiscal year:					
1910	$11,725,996	$27,715	$2,381,172	0.23	20.3
1911	.....	48,092	2,983,686	.....	.....
1912	.....	23,206	2,520,202	.....	.....
1913	.....	38,760	2,805,978	.....	.....
1914	27,115,916	147,384	2,512,320	.54	9.3
1915	.....	224,056	1,563,109	.....	.....
1916	.....	262,041	2,138,437	.....	.....
1917	.....	458,253	3,648,317	.....	.....
1918	.....	334,854	4,684,329	.....	.....
Calendar year:					
1918	.....	322,188	4,182,409	.....	.....
1919	.....	578,518	6,193,387	.....	.....
1920	.....	817,957	7,876,699	.....	.....

	Value (imports for consumption).	Amount of duty.	Value per unit of quantity.	Actual or equivalent ad valorem rate.
Fiscal year:				
1910 [5]	$254	$51	.....	20
1910 [6]	27,461	12,357	.....	45
1911	48,092	21,642	.....	45
1912	23,206	10,443	.....	45
1913	38,760	17,442	.....	45
1914 [5]	19,132	8,609	.....	45
1914 [4]	128,252	32,063	.....	25
1915	224,056	56,014	.....	25
1916	262,041	65,510	.....	25
1917	458,253	114,563	.....	25
1918	334,854	83,713	.....	25
Calendar year:				
1918	322,188	80,547	.....	25
1919	578,518	144,629	.....	25
1920	817,957	204,489	.....	25
1921 [2]	290,089	725,221	.....	25

[1] Includes steel or other metal strings for musical instruments.
[2] First 6 months.
[3] Old law, July 1 to Oct. 3, 1913.
[4] New law, Oct. 4, 1913, to June 30, 1914.
[5] July 1 to Aug. 5, 1909, act of 1897.
[6] Aug. 6, 1909, to June 30, 1910, act of 1909.

GENERAL INFORMATION.

ACT OF OCTOBER 3, 1913.

PAR. 373. Musical instruments or parts thereof, pianoforte actions and parts thereof, cases for musical instruments, pitch pipes, tuning forks, tuning hammers, and metronomes; strings for musical instruments, composed wholly or in part of steel or other metal, all the foregoing, 35 per cent ad valorem.

PAR. 374. Phonographs, gramophones, graphophones, and similar articles, or parts thereof, 25 per cent ad valorem.

DESCRIPTION.

The principal classes of musical instruments manufactured in the United States are pianos, with and without player attachments; organs, reed and pipe; piano and organ materials; and phonographs and records. There are also a variety of instruments and materials manufactured under the class known as "Musical instruments and materials, not specified," which include wind and string instruments of many varieties.

Importations of foreign instruments of the principal classes above mentioned have been so small as to be almost negligible. The statistics of imports do not disclose the individual items, but it is quite certain that they consist mainly of violins, other stringed instruments, orchestrions and accordions, and small instruments requiring a great deal of hand labor or special skill in their manufacture.

DOMESTIC PRODUCTION.

Size and importance of the industry.—In 1914 there were 737 establishments, capitalized at a total of approximately $170,000,000, engaged in the manufacture of musical instruments or parts thereof and phonographs. Nearly 50,000 wage earners were employed, and the value of the products was only a little less than $120,000,000.

Materials, equipment, and methods of production.—Piano manufacture has become standardized to a great extent, the same style piano of different factories usually possessing but few distinguishing external characteristics other than the name on the fall board.

The first and one of the most important steps in the manufacture of a high-grade piano is the selection and seasoning of the wood. The wood used is almost entirely of American growth, the only notable exceptions being the ebony for the black keys and the expensive woods for veneers. "Just as Italian and Tyrolese forests made Amati violins possible in Cremona, so American lumber has made it possible to bring piano making to its highest perfection in this country."[1] The seasoned wood is usually glued together under pressure so as to effect a permanent joint. Very few metal bolts or screws are used in the framework, as they are liable to work loose. Both tonal quality and strength are secured by gluing the parts.

The metal plate is a casting of great strength, and its manufacture is an important step in the making of a piano. The sounding board

[1] Census of Manufactures, 1902, Part IV, Vol. X, p. 454.

is made from carefully selected spruce pine. The wire must be of great elasticity. The laying out of the scale and the arrangement of the wire and the action or striking mechanism require expert ability.

In the manufacture of reed organs practically all of the materials are strictly American products, even the ivory and ebony formerly used for the keys now being supplanted by celluloid and a stained wood. Very little expensive veneer is used. The manipulation of the tongue of the reed to a proper size and curve and the determining of the size of the reed cells, and qualifying cells, when such are used, are the most delicate of the operations involved in its manufacture.

The primary operation in the construction of a pipe organ, and that of the most importance, is the construction of the pipes. They are made of wood or metal, and require the greatest skill in voicing and tuning. The bellows or electric fan for furnishing the wind must be made to correspond to the size of the organ. The action of the keys is now usually electric.

Both the metal parts entering into the mechanism of the phonograph and the wood for the cabinets or cases are entirely American materials, excepting expensive veneers for the cabinets. The waxlike materials entering into the construction of the records are also entirely produced in the United States.

Organization.—There is a great tendency in the industry toward the corporate form of ownership with large factories having a high capitalization. In the piano and organ branch of the industry in 1914, 67.4 per cent of the total number of establishments, 92.5 per cent of the average number of wage earners, and 91.8 per cent of the value of products were controlled by corporations, the corresponding percentages for 1909 being 61.9, 86.1, and 85.7, respectively. Establishments whose annual output was valued at $100,000 or more turned out 90 per cent of the value of products in 1914 and 88.8 per cent in 1909. There were 478 establishments reported in this branch of the industry in 1914, with a total capitalization of $130,989,794 making the average capitalization of each about $270,000. This branch of the industry represents about 76 per cent of the capitalization of the entire musical instrument industry.

The form of ownership of establishments manufacturing musical instruments and materials not specified is not given by the census, but the average capitalization of the 241 establishments in 1914 was about $16,000 each. In 1909 there were 187 establishments reported, with an average individual capitalization of approximately $18,000. This branch of the industry has shown considerable fluctuation in the number of establishments, but the total capitalization and the total value of the products have both remained practically constant since 1899 at approximately $3,500,000. This branch of the industry represented only about 3 per cent of the total value of the products of the entire industry in 1914.

The character of ownership of the phonograph branch of the industry is not available, but it is known that a number of the principal manufacturers are large corporations. The capitalization of the 18 establishments reported in 1909 and 1914 increased from over $14,000,000 to approximately $34,000,000, which represented an average capitalization in 1914 of nearly $2,000,000 for each firm. The value of the products increased from $12,000,000 to $27,000,000 during the same period, and the number of persons engaged increased from 5,928 to 11,366.

Geographical distribution.—Pianos, organs, and materials: Based upon the value of products, the first four States for the years 1914 and 1909 were New York, Illinois, Massachusetts, and Connecticut. New York produced 37.2 per cent of the total in 1914, and Illinois produced 22.2 per cent. The two States combined produced nearly three-fifths (59.4) of the total value of products in 1914. The next six States, following the four enumerated above, were Indiana, Ohio, New Jersey, Michigan, Pennsylvania, and Wisconsin.

Musical instruments and materials, not specified: The three leading States in 1916, based upon value of products, were Indiana, Illinois, and New York. In 1909 they were New Jersey, Illinois, and Indiana. New Jersey dropped to fifth place in 1914. In both years the three leading States together reported more than one-half of the total value of products. Other States in 1914 were Massachusetts, Michigan, and Pennsylvania.

Phonographs: Both in 1914 and 1909 New Jersey was, by far, the leading State, measured by value of products, followed by Connecticut and New York in the order named.

History of the industry.—The development of the industry has taken place almost entirely since the year 1850. It is also true that the most important inventions have been applied since that time. Just what effect the various tariff rates may have had upon the development of the industry is difficult to determine, but the facts do not seem to indicate that its development is traceable so much to the tariff rates as to the improvements in the manufacture of the instruments and the growth of the market for them.

The value of the products of the industry has shown a remarkable but steady increase since 1849. In round numbers the values of the products of the combined industry for the census years are as follows: 1849, $2,000,000; 1859, $7,000,000; 1869, $14,000,000; 1879, $19,000,000; 1889, $37,000,000; 1899, $47,000,000; 1904, $80,000,000; 1909, $105,000,000; 1914, $120,000,000. The imports in 1872, the first year musical instruments were separately reported, amounted to only 7.6 per cent of the domestic production as reported in the nearest census year, and they declined to 4.8 per cent of the domestic production in 1880. There was no duty placed on musical instruments until 1883, when a duty of 25 per cent ad valorem was imposed. Foreign competition had evidently little effect upon the early development of the industry, and in this 30-year period from 1849 to 1879 the yearly value of the products had increased from $2,000,000 to $19,000,000, without any protection afforded by the tariff.

The imports in 1890 amounted to 4.6 per cent of the domestic production, practically the same as in 1880, but both the imports and domestic production had nearly doubled in value since the year 1880. Some of the most important improvements in piano manufacture were being put into use during this 10-year period, and the market for instruments was no doubt expanding in a manner corresponding with the development of their manufacture. There was a tariff of 25 per cent ad valorem in effect during this period.

In 1890 musical instruments were not enumerated in the tariff act, but in 1894 the duty of 25 per cent was restored and in 1897 it was raised to 45 per cent. However, the increase in the value of the domestic products under this protection was only about $10,000,000 for the 10-year period 1889 to 1899, while in the previous 10-year period the increase had been nearly $20,000,000.

The growth of the phonograph industry has taken place since the year 1890, and the player-piano industry has developed mainly since 1895. The value of products of the entire industry in 1904 clearly indicates this development, since in the 5-year period from 1899 to 1904 there was an increase from $47,000,000 to $80,000,000, and this total jumped to $105,000,000 for the 10-year period ending in 1909. The yearly importation remained practically constant, although the percentage decreased to about 2 per cent of the value of domestic products. The tariff rate remained at 45 per cent from 1897 until 1913, when it was reduced to 35 per cent.

Domestic production and consumption.—Production by States for recent census years will be found in the statistical tables. The value of the products of the combined industry was given above. The small importation of about $1,000,000 annually is made up mainly of instruments and materials which supplement the home product and do not furnish serious competition to it. The increase in the value of exports, amounting to over $9,000,000, in 1918 would seem to indicate that the domestic production is sufficient to meet the demand of the home market and furnish a surplus.

Domestic exports.[2]—Domestic exports of the combined industry increased from a total value of $5,870,951 in 1914 to $9,599,628 in 1918. This amount in 1918 was almost evenly divided between musical instruments and phonographs. The following table shows the distribution of exports for the two fiscal years:

	1914		1918	
	Number.	Value.	Number.	Value.
Musical instruments:				
Organs	8,457	$555,743	2,330	$139,706
Player-pianos	1,219	335,299	3,545	1,095,665
Piano players	1,126	177,683	227	59,771
Pianos, all other	6,501	1,416,888	13,900	2,292,467
Perforated music rolls	.....	127,626	.....	149,309
Musical instruments, all other	.....	745,392	.....	1,178,381
Phonographs and materials: [1]				
Phonographs	.....	2,512,320	91,217	2,610,866
Records and accessories	.....	.....	.....	2,073,463
Total value	.....	5,870,951	.....	9,599,628

[1] Not stated separately prior to 1915.

The destination of exports has changed noticeably in the past few years, probably due to the war. England and European countries have taken decreasing amounts; in some cases exports to European countries have entirely ceased. On the other hand exports to Cuba, Mexico, and the Central and South American countries have greatly increased. Australia was the leading purchaser of the exports of pianos in 1918, taking very nearly one-half of the total. Canada has been and remains one of the principal buyers of all classes of instruments exported from the United States, and took approximately one-half of the exports of phonographs and materials in 1918.

The American piano and player-piano are quite generally considered to be superior instruments in all markets, especially the highest

[2] "Foreign Trade in Musical Instruments," Special Consular Reports, No. 55, 1912.

grade American piano, but its sale in foreign markets is largely restricted to the purchaser to whom expense is not the primary consideration, as it is generally higher priced than its competitors. The high Canadian tariff restricts the sale of American pianos in that country, but in several districts its sale amounts to 35 per cent or more of the total sales. In general, about 80 to 90 per cent of the South American piano market was supplied, before the war, by Germany. Although the American piano was highly regarded as to quality, it was too high priced and was not built to conform to the tastes of the purchaser in such matters as ornamentation and finish, size and weight, and method of packing for shipment. The same criticisms apply to the American piano in other fields. Before the war the American piano met keen competition in practically all foreign fields, and generally was not able to compete with the German and French product, especially the former, except in the high-grade instruments.

The American phonograph seems to have fared better than the piano in the foreign market, and it almost completely dominates the market for phonographs in the Western Hemisphere. It is also extensively sold in the European market and elsewhere, although it meets keen German competition.

The American export of organs and wind and string instruments is not so extensive, but Canada furnishes a good market for a considerable export. The American reed organ is still in good demand in some foreign countries and is generally able to compete successfully with other makes, but the demand is steadily declining. The American brass and wind instruments can not generally compete successfully with other makes in the foreign market.

Undoubtedly the exports of musical instruments would be greater were it not that piano and organ manufacturers have in some instances found it more advantageous to establish branch factories abroad, to carry out the ideas and methods of American production gauged to suit the requirements of the foreign trade, thus saving duties and obtaining the advantage of less expensive labor.

FOREIGN PRODUCTION.[3]

Available material on foreign production of musical instruments is very meager. Germany is the principal foreign manufacturer, especially of pianos. In 1912 it was estimated that there were 150 piano manufacturers in Berlin, whose annual production was about 10,500 pianos. The total number manufactured in Germany would no doubt exceed this many times. Commerce Reports, November 24, 1919, page 1098, states that the number of pianos exported from Germany in 1913 was 76,460. Based upon the number of pianos exported, it is quite clear that the total number manufactured in Germany before the war was large. The United States manufactured 326,274 pianos in 1914 and exported 8,846. Germany is entirely dependent upon foreign sources for its supply of cabinet woods, which has been cut off during the war. One German manufacturer of phonographs claims an annual output of about 200,000 instruments, but many of these are of the cheaper grades. Germany is the principal exporter of musical instruments to the United States.

[3] "Foreign Trade in Musical Instruments," Special Consular Reports, No. 55, 1912.

The United Kingdom exported 10,692 pianos of domestic manufacture in 1911, but imported 19,215. According to the census of 1911, there were 5,622 male piano and organ makers in London. Based upon the number of wage earners employed, the annual output is estimated at about 30,000 pianos. Talking machines and records to the value of $335,788 were manufactured in the United Kingdom in 1907. However, in 1912, it was reported that the bulk of the trade in phonographs was of German origin. Many of the high-grade phonographs were imported from the United States. There were 3,832 organs imported into the United Kingdom in 1910, and 915 of domestic manufacture were exported. There is not much trade in organs. Wind instruments to a value of $355,354, and string instruments to the value of $72,997 were manufactured in the United Kingdom in 1907, and the demand was said to be increasing.

France produced about 25,000 pianos annually before the war. Germany exported several hundred pianos annually to France, generally pianos of the cheaper grades, and sold them under the name of the local dealer in France. France exported about 4,000 pianos annually. France exported phonographs in 1910 to a value of $779,391, while imports were valued at only $141,095. The number of instruments manufactured, however, is not known.

Italy manufactured about 1,500 pianos annually before the war and imported 4,434 in 1910, of which 3,707 were imported from Germany. The average value of the imported piano was about $130 each. The demand for phonographs was pretty well supplied before the war by German manufacturers.

Russia manufactured about 6,000 pianos annually before the war, and imported 4,501 in 1910.

Canada manufactures about 20,000 pianos annually and imported 1,697 in 1911. Canada imports phonographs largely from the United States, but manufactures her own organs.

In comparison with these figures of foreign production the United States produced 326,274 pianos in 1914, 42,806 organs, 514,154 phonographs, and musical instruments not specified to a value of $3,624,667.

IMPORTS.

Reference to table of imports shows a slight increase from year to year in the value of imports of musical instruments, until the beginning of the war, reaching their highest point in 1914, with a total value of about $2,000,000. The domestic production in that year of the combined industry totaled $120,000,000. Imports thus represented only about 1.6 per cent of the value of domestic products.

As the imports are not classified it is difficult to determine their contents. However, it is quite certain that they do not consist of the products of the principal branches of the industry in this country, i. e., pianos and organs and phonographs. The value of imports has remained practically constant in amount since the year 1872, at a little over $1,000,000 in value, with a small increase in recent years but a decrease in comparison to the value of domestic products. This fact leads to the conclusion that the imports are mainly supplementary to the domestic products, as previously stated.

PRICES.

Satisfactory price comparisons are not available, but, as indicated in the discussion of domestic exports, whenever the American piano comes into competition in the foreign market with the German or French piano it is usually undersold, when price is the primary consideration. The consular agents reported in 1912 that a German piano sold in many markets for little more than $100. A price of $130 for the cheap piano was common. Such a piano could probably pay the freight and duty charges to the United States and still undersell the cheapest American piano. The fact is, however, that this piano is not the equal in quality or durability of the cheapest American pianos. A large local dealer in pianos asserts that there need be no fear of competition from the cheaper foreign pianos, whatever their price.

TARIFF HISTORY.

The rate imposed in 1883 was 25 per cent ad valorem. The act of 1890 did not enumerate musical instruments, but the act of 1894 restored the duty of 25 per cent, and the act of 1897 raised the duty to 45 per cent, where it remained until the act of 1913, when it was reduced to 35 per cent.

Phonographs were first enumerated in 1909, when a duty of 45 per cent was imposed. This was reduced to 25 per cent in 1913.

The fluctuation in the tariff rates apparently produced no noticeable fluctuation in the value of imports. Certain it is that the ratio of the value of imports to the value of domestic products began decreasing before any tariff on imports was imposed and has continued to decrease from year to year, irrespective of any changes in the tariff rates.

COMPETITIVE CONDITIONS.

The value of products of the musical instrument and phonograph industry in 1914 reached a total of approximately $120,000,000. The total value of imports of musical instruments and phonographs in the same year was $2,228,172. The ratio of imports to domestic production has been constantly decreasing, from 7.6 per cent in 1872 to less than 2 per cent in 1914. The following is a recent statement of one of the leading manufacturers of pianos, organs, and phonographs, located in Chicago:

> We believe that importation of foreign instruments such as we manufacture has been in the past so small as to be negligible.

There is no doubt that many of these instruments can be manufactured more cheaply in Germany and other foreign countries, but the quality and durability of the instruments are not such as to offer serious competition to the high-grade American instruments, especially in the case of pianos, organs, and phonographs. One of the great advantages possessed by the foreign manufacturer is a lower labor cost, and labor is one of the chief items of cost in this industry. On the other hand, the American woods used in piano manufacture are said to be superior to the foreign.

The tariff has not been of great importance in the growth of the American industry, since the cheaper foreign instruments could have

been imported and sold more cheaply than the American-made instruments in spite of the tariff. It is only logical to conclude that the cheaper grades have found a better market in other countries, and that the higher grades of foreign instruments fail to compete successfully in the American market. However, Mr. George W. Pound testified before the Committee on Ways and Means (Tariff Hearings, 1908–9, p. 7190–7201) that foreign competition had entirely driven the American orchestral or band organ out of the market. Such is certainly not the case with pianos, organs, and phonographs, which constitute the principal classes of instruments manufactured in this country.

Formerly it was considered that the American brass and wind instruments were much inferior to the imported, but these are now being manufactured extensively in this country and are considered by dealers to be the equal if not the superior of the foreign made.

TARIFF CONSIDERATIONS.

The present rate of 35 per cent on musical instruments and 25 per cent on phonographs has not brought any criticism from the manufacturers in reply to letters of inquiry sent out by the Tariff Commission. Manufacturers of violins, however, request a separate classification and a higher rate of duty for their product.

VIOLINS.

DESCRIPTION.

Stringed instruments played with a bow are made in a number of sizes, the smallest of which is the violin. The next larger is the viola, called alto or tenor, followed in order by the violoncello and double bass. All are of the same general model. The violin is usually made in three sizes—half and three-quarter sizes for children and full size, which is the most common. Violins are made practically of the same woods and of the same size and shape as they were 300 years ago in Italy. The Amati and Stradivarius models are still followed.

MATERIALS.

The woods used in making an American violin are the various species of maple found in Wisconsin, Michigan, and Ohio for the back, sides, and neck, and Oregon and Washington spruce for the top. The best maple is that which possesses a "curl" occurring in freak trees. Curly maple is scarce and consequently the greater proportion of violins is made of slightly curled or plain wood. All maple and spruce are quarter sawed to secure the "flame effect" of the curl of the maple and the narrow even grain of the spruce. Both woods must be air dried and aged for months.

METHODS OF MANUFACTURE.

The manufacture of violins is almost entirely wood carving.

Tops and backs are usually made from one piece of wood. The wood is split and the corresponding edges joined to show exactly the same symmetrical grain on both sides of the center line. This

is especially true in the use of curly maple. Backs and tops are carved, both inside and out, to the exact model desired and the thickness carefully graduated. The tone quality of a violin depends to a considerable extent on accurately proportioning the thickness of wood in all parts.

Machines are used for removing the bulk of the wood from tops and backs and spindle carriers for the necks. Only the rough work can be done in this way, as the accurate work in shaping and finishing the complex curved surfaces can be done only by actual handwork. It is claimed that the overdoing of machine carving caused the failure in 1920 of one company engaged in the manufacture of commercial violins.

The edges of the top and back are purfled, that is, a three-layer, very narrow strip of black-and-white wood is inlaid near the edge, which gives a double black line. The inlay for the top and back is composed of 30 pieces.

The neck scroll is carved by hand and is an example of the skill required. Sides, consisting of six pieces, together with side linings, neck and end blocks, the bass bar, neck, finger board, nut and tailpiece nut are carefully fitted and strongly glued together. After the parts are sanded and final finishing touches given by hand carvers, the instrument is ready to receive the varnish. Varnishing and rubbing operations are repeated several times, depending on the grade of the instrument.

In the final assembling, the end pin for tailpiece and pegs are fitted and inserted, and the tailpiece, tail gut, strings, and bridge are added. In all there are about 80 separate pieces. The instrument is then ready for tuning and testing. It is not until the final test discloses the quality of tone, dependent upon the resonant quality of the wood and workmanship, that the value of the instrument can be determined. It may be worth a few dollars or several hundred.

DOMESTIC PRODUCTION.

In 1914 the census reported 135 establishments, with a capital of $992,679, employing 495 wage earners, engaged in the manufacture of violins and other stringed instruments. The total product was valued at $1,142,149. The statistics do not show what proportion of the product was violins.

Violins have been made for many years in America by individuals in small shops. The Violinists' Guide Book gives the names of 385 individuals making from 1 to perhaps 20 annually. It is estimated that the output of violins by individuals will amount to 5,000 annually.

Up to the beginning of the war, very few violins were made on what may be termed a commercial scale. Manufacturers of other small musical instruments endeavored to supply the demand, but it is stated by a manufacturer that the care necessary and the cost of handwork made it impossible to compete with the foreign instruments, and that three companies, all having had experience in the trade, and manufacturing violins exclusively, have, within the past 15 months, gone into bankruptcy, due to the large shipments of the accumulated European stocks and the increasing shipments from Japan.

It is further stated by the manufacturer that there are three concerns still in business, each of which produce 3,000 or more violins annually. These three concerns, together with individual makers and musical instrument dealers who manufacture for their own trade employ about 1,500 people and produced about 65,000 violins in 1920.

FOREIGN PRODUCTION.

The industry in Italy is centered at Cremona, where were produced the celebrated violins of the sixteenth and seventeenth centuries.

Violin making is prominent in the Mittenwald and Markneukirchen districts of Germany.

There have been practical schools in Germany for many years where this peculiar and specialized trade is learned. The work is usually done in the homes, the several members of the family making such parts as their individual skill and age will permit. It appears to be the custom for families to specialize in making certain parts. The various parts are then assembled and the violins varnished and finished in a central place.

Wood carvers in Japan turned their activities to violin making several years ago and on account of their long experience in the art, they were able to copy the work with ease and produce violins of excellent quality.

IMPORTS.

The value of imports is not stated in official statistics. It is stated by a manufacturer who bases the data on the importation of four dealers that prior to the war imports came from Germany, Italy, and France and that the total importations amounted to 300,000 violins annually. Of these Germany shipped 150,000 to 175,000, Italy 75,000 to 100,000, and France 50,000 to 75,000. Shipments from Japan increased during the war as a result of a shortage in the United States of the European stock. Violins imported prior to the war were of various grades. It is stated that the retail price on some was as low as $1.25 to $3 each.

COMPETITIVE CONDITIONS.

Domestic manufacturers state that prior to the war all low and medium priced violins and most of the higher grades were imported from Germany, Italy, and France.

The fact that a violin is made in a foreign country adds greatly to its value in the eye of the average purchaser, as the impression has been created that American manufacturers are not able to supply good instruments. The claim of age for many foreign-made instruments also gives them a decided advantage over American makes.

It has been pointed out by an American manufacturer that first place was voted to a modern-made instrument in a test made by a celebrated cellist before well-known musicians and critics in Paris, and that a similar test with respect to violins resulted in favor of the modern instrument.

The prejudice in favor of the imported instrument has been somewhat overcome by domestic manufacturers, as a result of a greater use of American-made violins during the war, when the supply from Europe was cut off.

American manufacturers in the last three years have had to meet the competition of Japanese violins, which up to the present time have been of good tone and quality.

TARIFF CONSIDERATIONS.

Manufacturers of violins ask that their product be given a separate classification and rate in the tariff. They state that violins occupy a necessary position in the musical world; that they do not compete industrially or musically with any other instrument; that the product of European countries is made by workers skilled in the craft for generations and whose meager living expense is supplied by very low wages.

They further state that 95 per cent of all the violins sold in America were made abroad; that no low or medium priced instruments for beginners, known as commercial violins, were made here prior to the war, and that they constitute fully 75 per cent of the demand; that it was not until the war had eliminated European shipments were they able to begin manufacture on a commercial basis; that labor constitutes over 70 per cent of an average violin's cost.

Production of musical instruments and phonographs in United States, by States.

PIANOS, ORGANS, AND MATERIALS.

[From Federal census. Value expressed in thousands.]

State.	1899	1904	1909	1914
California	$76	$208	$150	$252
Connecticut	3,396	5,273	5,538	5,230
Illinois	8,156	13,323	19,176	19,706
Indiana	814	2,270	3,686	3,934
Kentucky	112	505	588	761
Massachusetts	6,172	8,279	9,106	8,213
Michigan	1,180	1,984	4,226	2,682
Minnesota	53	55	294	315
New Jersey	1,332	1,477	2,229	3,503
New York	14,746	23,390	33,680	33,072
Ohio	1,451	3,684	3,926	3,545
Pennsylvania	1,488	1,757	2,382	2,084
Wisconsin	18	184	893	1,470
All other	2,030	3,704	3,916	4,181
Total	41,024	66,093	89,790	88,948

PIANOS, WITH AND WITHOUT PLAYER ATTACHMENTS.

[From Census of Manufactures.]

State.	1899		1904		1909		1914	
	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.
Connecticut	7,269	$944,994	9,240	$1,238,667	9,759	$1,716,695	6,127	$972,343
Illinois	46,134	5,691,747	74,137	9,696,142	108,283	14,783,394	93,626	14,562,820
Indiana [1]	(1)	(1)	(1)	(1)	22,891	3,319,190	23,669	3,513,127
Massachusetts	16,809	3,566,662	23,126	5,129,833	28,177	5,328,716	25,544	5,033,930
Michigan [1]	(1)	(1)	(1)	(1)	25,165	3,732,973	13,707	2,203,745
New Jersey [1]	(1)	(1)	(1)	(1)	3,970	693,917	4,618	895,711
New York	71,855	11,862,257	102,032	16,684,911	131,780	22,764,384	121,215	22,285,359
Ohio	8,862	1,214,068	11,279	1,855,610	11,347	1,901,294	10,604	1,924,679
Pennsylvania [1]	(1)	(1)	(1)	(1)	9,402	1,818,070	6,783	1,363,114
Wisconsin [1]	(1)	(1)	(1)	(1)	4,735	540,350	11,766	1,440,721
All other	20,082	3,723,124	41,383	6,871,316	9,036	1,894,863	8,615	2,116,314
Total	171,011	27,002,852	261,197	41,476,479	364,545	58,493,846	326,274	56,311,863

[1] Figures for 1904 and 1899 included in "All other States," to avoid disclosing individual operations.

Production of musical instruments and phonographs in United States, by States—Con.

ORGANS.

[From Federal census.]

State.	1899		1904		1909		1914	
	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.
Illinois	52,394	$1,773,200	55,759	$1,969,543	28,798	$1,281,415	13,095	$1,448,429
Massachusetts	3,460	556,092	2,210	671,770	151	339,693	73	379,204
New York	73	216,120	58	133,471	245	330,373	679	734,771
Ohio	1,659	123,647	2,086	346,063	85	199,964	85	187,691
Pennsylvania	6,320	426,428	5,802	417,614	82	192,901	81	215,444
All other States	43,352	2,121,774	48,051	2,613,571	35,974	2,964,670	28,793	3,412,773
Total	107,258	5,217,261	113,966	6,152,032	65,335	5,309,016	42,806	6,378,312

PIANO AND ORGAN MATERIALS.

	1899	1904	1909	1914
Piano materials	[3]	$11,397,907	[3]	$19,492,444
Organ materials		1,730,408		383,318
United States		13,128,315	$18,474,616	19,875,762
States:				
Connecticut		2,397,822		3,221,000
Illinois		998,239		2,496,000
Massachusetts		2,165,393		2,438,000
New Jersey		288,959		[3]
New York		5,226,947		7,405,000
Ohio		1,412,839		1,333,000
All other States		638,116		2,983,000

MUSICAL INSTRUMENTS AND MATERIALS, NOT SPECIFIED.

	1899	1904	1909	1914
United States	$3,394,734	$3,481,710	$3,228,108	$3,624,667
Brass and other metal				1,390,819
Violins and other stringed instruments				1,142,149
All other				1,091,699
States:				
California	27,513	8,145	16,108	65,381
Illinois	514,393	674,370	629,163	719,344
Indiana	205,700	351,832	610,081	742,100
Kentucky	[4]	[4]	[4]	7,700
Maine	[4]	[4]	[4]	2,615
Massachusetts	469,239	259,445	259,781	418,845
Michigan	37,710	123,912	223,071	328,702
Minnesota	38,976	9,125	4,405	21,375
Missouri	45,181	47,744	24,973	17,178
New Jersey	879,521	862,886	635,209	353,854
New York	763,408	888,423	569,985	635,931
Oregon	[4]	[4]	[4]	17,132
Pennsylvania	221,064	173,215	115,118	133,365
Washington	[4]	4,247	9,995	13,380
All other States	192,029	78,366	130,219	147,765

[3] Not available.
[4] Included with "All other States."
[4] Included in "All other" in 1909, 1904, and 1899.

Production of musical instruments and phonographs in United States, by States—Con.

PHONOGRAPHS, GRAMOPHONES, GRAPHOPHONES, AND SIMILAR ARTICLES OR PARTS THEREOF.

	1899		1904		1909		1914	
	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.
United States	.....	$2,246,274	.....	$10,237,075	.....	[4]$11,725,996	.....	[5] 27,115,916
Phonographs, graphophones, and talking machines	151,403	1,240,503	(1)	2,966,343	344,681	5,406,684	514,154	15,290,491
Records and blanks	2,763,277	539,370	(1)	4,678,547	27,183,959	5,007,104	27,221,290	11,111,418
Parts and supplies not included in finished instruments	.....	(1)	.....	(1)	.....	844,631	.....	356,935
All other products	.....	466,401	.....	2,592,185	.....	467,577	.....	357,072
States: [6]								

[1] Not available.

[4] In addition, in 1914, phonographs, graphophones, and parts, valued at $66,531, and in 1909, valued at $31,899 were made by establishments engaged primarily in the manufacture of products other than those covered by this industry designation.

[6] States: "New York was the only State in 1914 for which statistics could be given separately without disclosing the operations of individual establishments, but the industry in New York was not of sufficient importance to present data in detail for this State. The value of the products of the 5 establishments located in New York was $160,603, or less than 1 per cent of the total for the country. Of the remaining 13 establishments reported in 1914, 4 were located in New Jersey; 3 in Illinois; 2 in Connecticut; and 1 each in Delaware, Massachusetts, Ohio, and Pennsylvania."

Imports of musical instruments and phonographs, by countries (fiscal years).

MUSICAL INSTRUMENTS AND PARTS OF, INCLUDING STRINGS.

Imported from—	1910	1911	1912	1913	1914	1915
Austria-Hungary	$99,345	$137,819	$106,150	$151,389	$177,092	$100,409
Belgium	5,672	5,380	4,119	4,353	4,160	830
France	224,795	250,420	239,448	271,804	285,349	163,626
Germany	940,955	1,123,538	1,166,608	1,257,074	1,467,611	871,126
Italy	17,540	28,798	27,350	35,854	58,598	53,858
Spain	2,751	3,070	7,139	4,079	4,318	2,149
Switzerland	9,822	9,514	7,227	5,311	8,135	6,505
England	28,174	43,466	22,144	24,782	34,934	20,732
Canada	8,701	10,919	20,367	12,950	21,573	8,878
Hongkong	1,796	1,025	567	1,032	2,295	2,627
Japan	3,348	3,664	7,301	9,028	4,067	4,517
All other countries	4,963	5,487	5,995	9,637	8,602	[1] 26,873
Total	1,347,862	1,623,100	1,614,415	1,787,293	2,076,734	1,262,140

Imported from—	1916	1917	1918	1918 [2]	1919 [2]	1920 [2]
Austria-Hungary	$35,452	$857	.....	$5,279	$28,811	.....
Belgium	.....	.....	.....	.....	70	.....
France	168,986	228,895	$241,299	201,343	270,572	.....
Germany	197,360	8,491	197	35,670	315,272	.....
Italy	65,643	72,526	52,326	46,493	53,836	.....
Spain	5,405	13,737	9,917	10,976	6,608	.....
Switzerland	17,823	18,688	6,525	5,763	34,496	.....
England	12,985	12,824	18,555	13,528	10,799	.....
Canada	24,853	25,015	32,241	33,773	43,687	.....
Hongkong	3,365	9,651	5,021	621	11,210	.....
Japan	26,160	124,748	337,349	210,921	513,684	.....
All other countries	8,283	11,375	6,924	36,167	11,329	.....
Total	566,315	526,807	710,354	566,761	1,300,374	$2,964,505

[1] Imports from Netherlands in 1915 were $18,376.

[2] Calendar years.

Imports of musical instruments and phonographs, by countries (fiscal years)—Con.

PHONOGRAPHS, ETC., AND PARTS OF.

Imported from—	1910	1911	1912	1913	1914	1915
Austria-Hungary	$173	$2,911	$1,426	$2,310	$4,881	$1,871
France	2,709	2,700	3,301	3,427	12,957	31,465
Germany	13,157	22,678	10,197	17,704	83,435	60,418
Italy	249	398	298	1,084	139	375
Switzerland	1,195	10,421	1,823	4,507	18,442	96,190
England	5,226	9,380	3,149	5,881	10,531	8,785
Japan	34	118	1,561	3,300	13,116	6,867
All other countries	4,454	3,214	793	1,187	7,937	9,140
Total	27,197	51,820	22,548	39,400	151,438	215,111

Imported from—	1916	1917	1918	1918 [2]	1919 [2]	1920 [2]
Austria-Hungary	$2,183	.....	.....	.....	$107	.....
France	45,908	$48,653	$11,824	$8,521	34,427	.....
Germany	4,509	146	.....	.....	695	.....
Italy	.....	41	.....	.....	399	.....
Switzerland	180,550	365,698	257,230	223,886	480,043	.....
England	25,536	42,900	7,994	150	3,345	.....
Japan	7,604	12,929	76,604	78,099	32,383	.....
All other countries	1,740	15,050	2,133	2,310	6,854	.....
Total	268,025	485,417	355,785	312,966	558,253	$875,530

[2] Calendar years.

[3] Ten months ending Oct. 31, 1920.

Imports of musical instruments and phonographs for consumption—Revenue.

MUSICAL INSTRUMENTS AND PARTS OF, INCLUDING STEEL OR OTHER METAL STRINGS.

	Rate of duty.	Quantity.	Value.	Duties collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:						*Per cent.*
1907	45 per cent	.....	$1,458,801	$656,460	.....	45
1908	do	.....	1,338,558	602,351	.....	45
1909	do	.....	1,275,969	574,186	.....	45
1910	do	.....	1,365,768	614,595	.....	45
1911	do	.....	1,568,187	705,684	.....	45
1912	do	.....	1,526,421	686,889	.....	45
1913	do	.....	1,738,824	782,470	.....	45
1914 [1]	do	.....	384,263	172,918	.....	45
1914 [2]	35 per cent	.....	1,583,414	554,195	.....	35
1915	do	.....	1,153,821	403,837	.....	35
1916	do	.....	652,448	228,356	.....	35
1917	do	.....	518,478	181,467	.....	35
1918	do	.....	666,057	233,119	.....	35
Calendar year:						
1918	do	.....	507,237	177,533	.....	35
1919	do	.....	1,281,018	448,356	.....	35
1920	do	.....	2,565,022	897,757	.....	35
1921 [3]	do	.....	1,450,204	507,571	.....	35

FROM PHILIPPINE ISLANDS.

Fiscal year:						
1909	75 per cent of 45 per cent.	.....	$5	$1	.....	.....
1911	Free	.....	2	.....	.....	.....
1913	do	.....	8	.....	.....	.....
1914	do	.....	45	.....	.....	.....
1916	do	.....	619	.....	.....	.....
1917	do	.....	131	.....	.....	.....
1918	do	.....	226	.....	.....	.....
Calendar year:						
1918	do	.....	111	.....	.....	.....
1919	do	.....	93	.....	.....	.....
1920	do	.....	92	.....	.....	.....

[1] Old law, July 1 to Oct. 3, 1913.

[2] New law, Oct. 4, 1913, to June 30, 1914.

[3] Six months ended June 30, 1921.

Imports of musical instruments and phonographs for consumption—Revenue—Con.

MUSICAL INSTRUMENTS AND PARTS OF, INCLUDING STEEL OR OTHER METAL STRINGS—Continued.

FROM CUBA (RECIPROCITY TREATY, DEC. 27, 1903).

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:						*Per cent.*
1908	45 per cent less 20 per cent.		$5	$1		36
1909	do		411	147		36
1910	do		12	4		36
1911	do		17	6		36
1912	do		45	16		36
1914	do		10	3		36
1915	35 per cent less 20 per cent.		81	22		28
1916	do		15	4		28
1917	do		197	55		28
1918	do		34	9		28
Calendar year:						
1918	do		32	9		28
1919	do					
1920	do		28	8		28

PHONOGRAPHS, AND SIMILAR ARTICLES, AND PARTS OF.

Fiscal year:						*Per cent.*
1910 [4]	20 per cent		$254	$50		20
1910 [5]	45 per cent		27,460	12,357		45
1911	do		48,092	21,641		45
1912	do		23,206	10,442		45
1913	do		38,759	17,441		45
1914 [1]	do		19,131	8,609		45
1914 [2]	25 per cent		128,252	32,063		25
1915	do		224,056	56,014		25
1916	do		262,041	65,510		25
1917	do		458,253	114,563		25
1918	do		334,854	83,713		25
Calendar year:						
1918	do		322,188	80,547		25
1919	do		578,518	144,629		25
1920	do		817,957	204,489		25
1921 [3]	do		290,089	72,522		25

[1] Old law July 1, to Oct. 3, 1913.
[2] New law, Oct. 4, 1913, to June 30, 1914.
[3] Six months ending June 30, 1921.
[4] Under act of 1897, July 1 to Aug. 5, 1909.
[5] Under act of 1909, Aug. 6, 1909, to June 30, 1910.

Domestic exports of musical instruments and phonographs.

ORGANS.

[Fiscal years.]

Exported to—	1910		1911		1912	
	Number.	Value.	Number.	Value.	Number.	Value.
Germany	614	$49,483	775	$37,754	1,038	$59,207
Netherlands	899	42,221	662	36,373	585	40,121
Norway	103	6,410	181	7,662	410	14,527
England	3,297	332,240	3,174	323,620	3,067	330,443
Scotland	327	28,134	207	8,097	183	7,264
Canada	322	24,616	389	33,932	499	31,875
Mexico	150	7,700	140	7,050	205	8,340
Newfoundland and Labrador	147	5,654	239	8,348	276	9,983
British West Indies	189	8,661	240	12,037	255	15,060
China	122	7,536	96	4,945	59	3,321
British India	74	4,576	68	3,933	73	5,567
Australia and Tasmania	1,602	93,640	1,614	86,133	1,491	76,395
New Zealand	185	8,997	123	6,877	208	11,364
British South Africa	771	33,749	645	28,975	726	33,922
All other	648	86,296	582	61,337	716	43,497
Total	9,450	721,913	9,135	667,073	9,791	690,886

Domestic exports of musical instruments and phonographs—Continued.

ORGANS—Continued.

Exported to—	1913		1914		1915	
	Number.	Value.	Number.	Value.	Number.	Value.
Germany	687	$48,315	334	$15,392	4	$249
Netherlands	594	27,170	501	23,080	54	2,639
Norway	87	4,171	195	8,174	5	950
England	2,174	292,257	2,853	251,207	993	61,144
Scotland	221	7,576	308	19,533	117	4,628
Canada	693	46,173	517	37,767	269	15,633
Mexico	188	8,715	81	3,511	6	747
Newfoundland and Labrador	213	9,990	249	11,236	129	4,544
British West Indies	208	11,914	207	9,989	114	6,959
China	139	6,779	167	8,844	83	4,147
British India	95	5,761	110	7,128	108	4,788
Australia and Tasmania	1,451	79,582	1,098	64,869	770	42,576
New Zealand	152	7,612	142	7,657	66	3,172
British South Africa	966	36,423	1,049	40,410	290	10,314
All other	835	55,014	646	46,946	442	27,670
Total	8,703	647,451	8,457	555,743	3,450	190,160

Exported to—	1916		1917		1918	
	Number.	Value.	Number.	Value.	Number.	Value.
Netherlands	79	$5,817				
Norway	21	1,396	9	$467		
England	842	51,332	43	1,925		
Scotland	152	7,437				
Canada	572	30,645	559	27,665	656	$42,859
Mexico	2	111	5	435	21	871
Newfoundland and Labrador	80	3,950	113	4,968	121	5,464
British West Indies	92	4,861	105	4,619	77	4,116
China	89	6,097	114	5,934	88	3,921
British India	26	1,655	51	2,676	63	2,344
Australia and Tasmania	720	41,343	738	43,921	568	39,145
New Zealand	61	3,371	100	5,007	90	4,676
British South Africa	324	13,617	257	9,842	222	8,547
All other	531	40,761	534	36,615	424	27,763
Total	3,591	212,393	2,628	144,074	2,330	139,706

[Calendar years.]

Exported to—	1918		1919		1920	
	Number.	Value.	Number.	Value.	Number.	Value.
Netherlands			16	$926		
Norway	11	$2,914	89	6,106		
England			87	4,761		
Canada	611	44,345	260	21,897		
Mexico	11	718	82	4,192		
Newfoundland and Labrador	103	5,429	262	17,640		
British West Indies	75	4,121	72	5,104		
China	72	3,011	138	6,607		
British India	33	1,082	21	1,205		
Australia and Tasmania	257	15,892	377	21,006		
British South Africa	121	4,698	290	16,106		
All other	353	30,852	577	69,097		
Total	1,647	113,062	2,271	174,647	2,720	$296,942

Domestic exports of musical instruments and phonographs—Continued.

PLAYER-PIANOS.[1]

[Fiscal years.]

Exported to—	1913		1914		1915	
	Number.	Value.	Number.	Value.	Number.	Value.
France	3	$845	12	$3,993	3	$1,163
Germany	8	3,079	53	12,172	1	385
Italy	39	12,051	121	35,986	17	5,462
Portugal	3	980	6	1,632	1	409
Spain	10	4,522	20	7,181	61	18,994
England	126	33,899	165	36,351	499	135,109
Canada	432	101,355	251	58,353	100	26,033
Mexico	118	32,442	36	12,657	10	3,079
Cuba	78	19,333	65	17,455	89	23,434
Argentina	141	47,339	59	21,730	28	8,062
Brazil	53	17,066	22	6,623	3	818
Chile	75	24,647	11	3,705	10	2,630
Colombia	5	1,941	12	4,842	47	11,219
Ecuador	1	347	1	675	3	900
Peru	1	285	4	2,052	2	545
Uruguay	36	13,079	16	5,384	27	7,639
Venezuela	7	2,424	26	7,115	42	8,948
Australia	109	27,414	158	41,895	255	63,500
All other	129	45,245	181	56,688	117	35,942
Total	1,374	388,293	1,219	335,290	1,315	356,532

Exported to—	1916		1917		1918	
	Number.	Value.	Number.	Value.	Number.	Value.
France	82	$42,567	1	$725	3	$850
Italy	21	5,963	22	9,360	1	545
Portugal	23	4,954	50	14,830	.....	.....
Spain	158	53,373	398	137,744	624	208,309
England	178	58,789	1	575	38	7,500
Canada	60	22,133	108	30,813	253	63,499
Mexico	8	3,890	63	24,002	112	49,139
Cuba	119	31,884	244	75,946	614	181,868
Argentina	62	20,135	108	33,632	167	55,176
Brazil	4	1,095	64	18,822	64	19,687
Chile	45	15,438	83	30,357	203	75,485
Colombia	92	27,186	269	81,471	140	45,498
Ecuador	39	9,950	100	30,005	117	37,101
Peru	39	12,549	72	22,279	82	29,379
Uruguay	30	9,403	43	12,650	49	15,917
Venezuela	44	12,346	35	9,400	78	26,393
Australia	351	96,886	824	224,804	622	176,222
All other	106	41,899	321	98,474	378	103,097
Total	1,461	470,340	2,806	855,889	3,545	1,095,665

[Calendar years.]

Exported to—	1918		1919		1920	
	Number.	Value.	Number	Value.	Number.	Value.
France	.....	.....	6	$3,975	.....	.....
Italy	.....	.....	5	1,670	.....	.....
Portugal	16	$4,194	24	12,592	.....	.....
Spain	825	325,288	627	313,899	.....	.....
England	38	7,500	12	10,474	.....	.....
Canada	206	55,110	96	29,859	.....	.....
Mexico	110	50,871	160	68,733	.....	.....
Cuba	734	218,036	663	208,175	.....	.....
Argentina	89	34,564	198	69,548	.....	.....
Brazil	43	12,740	84	30,645	.....	.....
Chile	244	106,139	114	52,329	.....	.....
Colombia	104	35,055	108	41,027	.....	.....
Ecuador	53	18,912	14	5,475	.....	.....
Peru	105	45,785	154	66,678	.....	.....
Uruguay	57	19,282	96	36,146	.....	.....
Venezuela	61	21,500	72	22,724	.....	.....
Australia	634	164,125	1,279	416,758	.....	.....
All other	399	153,019	666	260,812	.....	.....
Total	3,718	1,272,210	4,378	1,656,519	8,364	$3,472,632

[1] Included in "Pianos, all other" prior to 1913.

Domestic exports of musical instruments and phonographs—Continued.

PIANO PLAYERS.

[Fiscal years.]

Exported to—	1910		1911		1912	
	Number.	Value.	Number.	Value.	Number.	Value.
Germany	454	$133,023	655	$199,945	338	$95,906
England	1,407	401,580	1,294	359,217	1,039	295,578
Canada	169	56,603	213	70,341	16	3,804
Argentina	126	31,190	112	31,696	54	12,790
Brazil	121	23,817	112	26,282	28	7,555
Australia and Tasmania	242	41,820	306	57,525	88	11,925
All other	216	51,232	184	50,360	77	18,728
Total	2,735	739,265	2,876	795,366	1,640	446,286

Exported to—	1913		1914		1915	
	Number.	Value.	Number.	Value.	Number.	Value.
Germany	3	$701	106	$17,930	1	$102
England	906	232,834	864	123,051	231	53,949
Canada	16	2,969	14	3,559	5	1,120
Argentina	18	3,143	15	3,453	10	3,783
Brazil	4	258	.....	.....	3	750
Australia and Tasmania	211	26,028	46	7,885	17	3,958
All other	100	21,787	81	21,805	57	16,765
Total	1,258	287,720	1,126	177,683	324	80,427

Exported to—	1916		1917		1918	
	Number.	Value.	Number.	Value.	Number.	Value.
England	22	$7,301	10	$2,700	.....	.....
Canada	5	1,224	3	1,082	10	$1,902
Argentina	39	7,178	3	1,078	3	820
Brazil	10	2,750	1	325	1	450
Australia and Tasmania	70	19,860	7	2,501	106	22,963
All other	129	34,296	133	38,646	107	33,636
Total	275	72,609	157	46,332	227	59,771

[Calendar years.]

Exported to—	1918		1919		1920	
	Number.	Value.	Number.	Value.	Number.	Value.
England	.....	.....	.....	$886	.....	.....
Canada	11	$3,134	12	3,542	.....	.....
Argentina	2	400	9	1,591	.....	.....
Brazil	1	450	16	4,710	.....	.....
Australia	80	16,538	22	5,567	.....	.....
Spain	21	7,761	37	17,554	.....	.....
Mexico	21	5,213	13	4,619	.....	.....
Cuba	10	2,357	40	8,962	.....	.....
All other	29	9,714	31	10,233	.....	.....
Total	175	45,567	180	57,664	117	$46,399

Domestic exports of musical instruments and phonographs—Continued.

PIANOS, ALL OTHER.

[Fiscal years.]

Exported to—	1910		1911		1912	
	Number.	Value.	Number.	Value.	Number.	Value.
France	61	$20,692	60	$22,316	65	$16,344
Germany	137	29,945	155	41,670	188	62,502
Italy	76	24,017	145	45,262	170	42,193
England	838	278,882	1,066	329,165	1,091	339,128
Canada	1,690	368,089	1,519	324,443	2,430	529,695
Panama	45	11,272	58	14,995	47	10,990
Mexico	480	104,565	432	104,212	387	92,309
Cuba	300	47,636	275	42,343	446	68,518
Argentina	293	63,979	271	53,281	396	84,654
Brazil	96	23,009	152	30,912	446	99,767
Chile	82	21,099	115	34,735	241	72,088
Colombia	14	3,168	30	5,396	59	15,209
Peru	3	1,005	10	2,408	16	3,205
Uruguay	47	13,257	90	20,512	211	45,502
Australia and Tasmania	305	40,863	444	64,402	458	73,664
New Zealand	10	1,593	10	1,337	7	780
Philippine Islands	16	4,043	132	25,597	172	30,478
British South Africa	12	2,493	14	4,325	23	4,758
All other	461	103,860	639	139,939	674	147,810
Total	4,966	1,163,467	5,617	1,307,250	7,527	1,739,594

Exported to—	1913		1914		1915	
	Number.	Value.	Number.	Value.	Number.	Value.
France	58	$14,966	88	$22,608	13	$2,685
Germany	70	19,009	44	10,824	5	2,052
Italy	267	54,647	134	31,762	52	13,400
England	914	280,838	1,086	323,565	246	64,950
Canada	2,576	474,810	2,281	454,340	1,054	221,086
Panama	92	19,150	65	14,138	44	11,618
Mexico	605	133,525	194	44,295	27	10,474
Cuba	550	80,241	436	67,367	445	74,691
Argentina	294	54,537	237	45,057	184	39,737
Brazil	414	82,391	208	45,513	115	21,388
Chile	169	41,490	161	41,585	19	4,846
Colombia	78	17,370	42	9,401	56	12,655
Peru	15	4,371	14	3,698	9	1,954
Uruguay	247	49,087	165	40,794	68	14,524
Australia	440	66,843	447	76,213	1,308	185,671
New Zealand	10	2,824	21	3,013	32	4,683
Philippine Islands	128	29,734	149	29,617	75	15,578
British South Africa	6	3,218	10	2,451	62	9,900
All other	675	134,621	719	150,647	408	96,674
Total	7,608	1,563,672	6,501	1,416,888	4,222	808,565

Exported to—	1916		1917		1918	
	Number.	Value.	Number.	Value.	Number.	Value.
France	3	$900				
Italy	32	8,259	4	$1,414		
England	192	50,350				
Canada	792	184,019	1,227	219,615	1,284	$236,195
Panama	103	30,327	78	17,010	66	13,214
Mexico	64	20,124	223	54,724	228	68,645
Cuba	1,031	151,728	1,241	203,475	1,607	282,867
Argentina	576	106,929	550	97,993	704	130,608
Brazil	208	38,092	400	70,451	305	60,821
Chile	91	20,534	213	55,586	222	54,737
Colombia	97	23,171	191	40,945	118	35,281
Peru	58	14,291	152	29,339	199	49,849
Uruguay	147	35,380	206	38,152	234	53,933
Australia	4,407	643,209	5,566	680,800	5,943	791,391
New Zealand	99	16,795	266	32,721	287	31,513
Philippine Islands	145	29,171	240	34,466	300	42,016
British South Africa	473	60,602	418	45,526	813	112,621
All other	825	183,382	1,220	252,387	1,590	328,778
Total	9,343	1,617,263	12,195	1,874,604	13,900	2,292,467

Domestic exports of musical instruments and phonographs—Continued.

PIANOS, ALL OTHER—Continued.

[Calendar years.]

Exported to—	1918		1919		1920	
	Number.	Value.	Number.	Value.	Number.	Value.
Austria-Hungary			2	$510		
Belgium			24	5,987		
Greece			117	34,473		
Norway	201	$82,490	270	73,535		
Spain	369	123,255	242	93,392		
England			89	32,050		
Canada	1,176	231,621	776	195,953		
Panama	70	14,109	72	16,728		
Mexico	189	57,030	383	123,236		
Cuba	1,298	249,513	998	242,352		
Argentina	412	99,284	1,084	319,013		
Brazil	212	46,967	445	130,762		
Chile	225	50,962	264	90,409		
China	137	30,245	136	42,560		
Japan	102	22,722	118	32,021		
Australia	3,556	537,498	4,052	760,096		
New Zealand	222	33,057	581	99,370		
Philippine Islands	325	49,815	228	42,656		
British South Africa	642	96,470	919	214,461		
All other	970	224,670	1,707	464,620		
Total	10,106	1,949,708	12,507	3,001,994	16,838	$5,261,071

PREFORATED MUSIC ROLLS.[1]

[Fiscal years.]

Exported to—	1913	1914	1915	1916	1917	1918
Germany	$6,498	$4,792				
England	40,800	34,911	$11,524	$3,496	$477	$300
Canada	39,003	33,098	23,169	20,826	27,102	52,619
Mexico	12,428	5,508	627	195	1,954	6,581
Cuba	6,141	9,518	4,035	8,379	12,314	15,691
Australia	13,157	8,921	6,996	4,034	24,231	31,275
All other	40,469	30,878	21,548	22,549	35,339	42,843
Total	158,496	127,626	67,899	59,479	101,417	149,309

[Calendar years.]

Exported to—	1918	1919	1920
Spain	$5,025	$2,734	
Sweden	350	677	
England	300	14,618	
Canada	54,237	92,834	
Mexico	3,173	5,328	
Cuba	13,383	18,945	
Chile	12,300	9,630	
Argentina	4,470	11,861	
Brazil	2,089	2,752	
Colombia	2,780	3,119	
Ecuador	3,611	362	
Peru	2,113	10,110	
Australia	42,916	87,981	
Philippine Islands	2,198	544	
All other	11,566	33,257	
Total	160,511	294,752	$409,913

[1] Included in "All other, and parts of" prior to 1913.

Domestic exports of musical instruments and phonographs—Continued.

ALL OTHER MUSICAL INSTRUMENTS, AND PARTS OF.

[Fiscal years.]

Exported to—	1910	1911	1912	1913	1914	1915
Germany	$57,455	$94,095	$86,946	$95,643	$143,885	$4,937
England	138,055	175,431	117,004	102,421	99,008	206,456
Canada	225,190	267,670	327,086	408,158	344,059	209,311
Mexico	22,337	28,114	29,937	21,768	7,934	30,921
Cuba	3,492	4,500	10,406	8,491	8,736	6,202
Japan	3,672	2,108	4,812	1,878	4,023	4,576
Australia and Tasmania	12,177	36,138	39,386	25,955	36,908	10,162
All other	95,320	93,656	114,593	89,785	100,839	72,567
Total	557,698	701,712	730,170	754,099	745,392	545,132

Exported to—	1916	1917	1918	1918[1]	1919[1]	1920[1]
Germany					$14,715	
England	$387,416	$137,277	$76,195	$22,874	222,146	
Canada	381,538	538,114	646,405	610,402	743,325	
Mexico	13,991	34,788	27,530	31,507	40,080	
Cuba	25,238	22,528	32,578	44,334	53,543	
Japan	3,415	17,434	33,560	67,482	40,609	
Australia and Tasmania	67,890	120,757	137,749	108,870	172,622	
All other	142,492	249,682	224,364	249,167	411,277	
Total	1,021,980	1,120,580	1,178,381	1,134,636	1,698,317	$2,361,610

PHONOGRAPHS, GRAPHONES, GRAMAPHONES, AND RECORDS AND MATERIALS FOR.[2]

[Fiscal years.]

Exported to—	1910	1911	1912	1913	1914
France	$10,223	$25,686	$21,081	$14,769	$17,492
Germany	110,987	96,361	93,578	45,123	50,073
England	753,265	776,378	672,838	691,997	532,033
Canada	331,577	528,401	462,294	755,021	894,143
Mexico	263,717	176,543	183,470	175,689	82,067
Cuba	40,968	66,138	70,427	91,250	93,591
Argentina	169,966	185,366	249,230	338,557	161,078
Brazil	97,146	224,308	170,183	143,925	48,808
Chile	17,629	23,446	23,251	41,395	44,213
Colombia	31,143	45,522	12,390	13,739	16,811
Ecuador	4,694	15,918	15,176	19,866	21,353
Peru	13,554	24,984	30,222	36,180	17,407
Uruguay	32,796	41,522	81,340	43,560	14,481
China	29,161	36,508	18,512	42,505	37,791
Japan	33,253	44,891	45,893	28,797	10,889
Australia and Tasmania	249,421	362,900	113,645	81,918	181,828
Philippine Islands	47,554	91,829	67,320	42,994	36,325
British South Africa	27,275	27,922	21,191	16,453	5,664
All other	116,843	199,063	168,251	192,240	246,273
Total	2,381,172	2,983,686	2,520,292	2,805,978	2,512,320

[1] Calendar year.

[2] Stated separately after 1914.

Domestic exports of musical instruments and phonographs—Continued.

PHONOGRAPHS, GRAPHOPHONES, AND GRAMOPHONES.[2]

Exported to—	1915		1916		1917	
	Number.	Value.	Number.	Value.	Number.	Value.
England	3,656	$132,860	3,081	$148,630	871	$43,481
Canada	24,167	437,739	26,888	646,790	51,471	1,176,650
Mexico	215	10,141	75	3,818	467	19,084
Cuba	2,381	36,915	2,789	67,218	6,511	110,208
Argentina	268	8,848	685	24,015	1,068	41,143
Brazil	314	11,881	576	23,142	1,394	44,937
Chile	567	8,346	393	10,798	1,552	31,507
Colombia	311	5,069	277	7,250	556	11,936
Peru	97	2,387	207	6,726	469	11,074
Uruguay	452	7,287	429	12,650	692	13,113
Venezuela	130	4,414	427	10,311	1,030	17,608
China	511	12,622	717	25,243	938	54,858
Hongkong	142	1,345	403	15,577	168	8,002
Japan	79	5,236	133	5,379	182	6,254
Australia	1,492	41,576	1,640	63,601	4,168	159,965
New Zealand	.....	.....	301	6,711	753	24,344
Philippine Islands	398	17,274	927	37,981	1,081	34,311
British South Africa	66	2,053	85	2,524	469	8,344
All other	1,634	48,018	2,228	80,283	4,829	171,059
Total	36,880	794,011	42,261	1,198,647	78,669	1,987,878

Exported to—	1918		1918[1]		1919[1]		1920[1]	
	Number.	Value.	Number.	Value.	Number.	Value.	Number.	Value.
England	1,384	$125,212	1,669	$37,186	2,528	$140,698	.....	.....
Canada	62,037	1,644,590	34,071	1,037,799	27,468	1,174,775	.....	.....
Mexico	946	42,964	1,306	43,717	2,526	86,933	.....	.....
Cuba	6,961	161,426	5,828	131,318	5,387	144,414	.....	.....
Argentina	1,126	55,133	1,193	44,242	2,196	83,389	.....	.....
Brazil	957	34,499	536	17,703	1,188	46,328	.....	.....
Chile	1,377	52,247	1,962	47,028	1,521	60,190	.....	.....
Colombia	584	13,295	439	8,970	656	16,560	.....	.....
Peru	807	18,468	512	12,651	1,278	35,906	.....	.....
Uruguay	1,419	22,936	892	12,141	2,554	47,163	.....	.....
Venezuela	237	8,324	291	9,266	378	11,286	.....	.....
China	1,071	33,376	1,342	42,973	1,212	57,570	.....	.....
Hongkong	282	5,569	468	13,970	405	14,401	.....	.....
Japan	340	13,936	640	27,614	1,484	24,654	.....	.....
Australia	4,065	132,567	4,168	130,960	4,612	188,029	.....	.....
New Zealand	458	20,036	548	21,982	797	30,103	.....	.....
Philippine Islands	1,706	57,118	2,674	89,263	1,618	46,593	.....	.....
British South Africa	470	8,877	906	17,584	330	13,688	.....	.....
All other	4,990	160,293	4,914	159,685	8,029	268,039	.....	.....
Total	91,217	2,610,866	64,459	1,906,052	66,157	2,490,719	87,571	$4,130,312

RECORDS AND ACCESSORIES.[2]

Exported to—	1915	1916	1917	1918	1918[1]	1919[1]	1920[1]
England	$165,867	$198,750	$193,785	$73,345	$52,794	$237,072	.....
Canada	212,625	349,352	831,152	1,280,629	1,367,018	2,027,870	.....
Mexico	5,557	1,761	13,051	35,301	65,022	71,562	.....
Cuba	61,437	76,894	138,572	165,621	205,383	223,015	.....
Argentina	84,214	35,863	49,795	84,251	83,807	160,066	.....
Brazil	7,130	22,819	55,608	56,927	53,257	67,896	.....
Chile	10,367	14,001	16,624	24,689	32,142	62,636	.....
Colombia	10,424	10,148	9,821	11,259	7,313	21,276	.....
Peru	3,849	10,458	6,024	8,581	6,215	26,255	.....
Uruguay	8,797	9,986	18,692	19,179	15,361	42,737	.....
Venezuela	11,123	10,243	15,235	9,914	11,193	20,065	.....
China	16,759	11,830	18,519	11,057	11,517	49,154	.....
British India	1,819	4,069	13,404	23,117	25,939	52,154	.....
Japan	5,410	5,344	11,448	11,419	16,867	25,297	.....
Australia	64,605	65,698	101,111	96,740	116,984	206,907	.....
New Zealand	261	812	8,596	33,314	27,296	19,058	.....
Philippine Islands	26,551	27,561	28,268	30,184	59,471	103,880	.....
All other	72,308	84,201	130,734	97,936	118,778	.....	.....
Total	769,098	939,790	1,660,439	2,073,463	2,276,357	3,702,668	$3,746,387

[1] Calendar year.

[2] Not separately recorded prior to 1915.

Rates of duty—Musical instruments and phonographs.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883...	469	Musical instruments of all kinds	25 per cent ad valorem.
1890....	.....	(Not enumerated)	
1894 ...	326½	Musical instruments or parts thereof (except pianoforte actions and parts thereof), strings for musical instruments not otherwise enumerated, cases for musical instruments, pitch pipes, tuning forks, tuning hammers, and metronomes.	Do.
1897....	453	Musical instruments or parts thereof, pianoforte actions and parts thereof, * * *, cases for musical instruments, pitch pipes, tuning forks, tuning hammers, and metronomes; strings for musical instruments, composed wholly or in part of steel or other metal, all the foregoing.	45 per cent ad valorem.
1909....	467	Musical instruments or parts thereof, pianoforte actions and parts thereof, * * * not otherwise enumerated in this section, cases for musical instruments, pitch pipes, tuning forks, tuning hammers, and metronomes; strings for musical instruments, composed wholly or in part of steel or other metal, all the foregoing.	Do.
1913...	373	Musical instruments or parts thereof, pianoforte actions and parts thereof, cases for musical instruments, pitch pipes, tuning forks, tuning hammers, and metronomes; strings for musical instruments, composed wholly or in part of steel or other metal, all the foregoing.	35 per cent ad valorem.
1909....	468	Phonographs, gramophones, graphophones, and similar articles, or parts thereof.	45 per cent ad valorem.
1913....	374	.....do	25 per cent ad valorem.

Court and Treasury Decisions.

Musical instruments.—A musical instrument has been declared to be "an implement or structure artificially constructed and ordinarily used for the production of a succession of musical and harmonious sounds, or the completed indispensable parts of such structure or implements, artificially constructed which are practically indispensable in the art of music, and which are constructed and ordinarily used for the production of musical and harmonious sounds." (G. A. 8177, T. D. 37680, of 1918.) It is no part of the definition of a musical instrument that it can be used to produce a continuous melody and that a chromatic scale can be played upon it (United States *v.* Sears, Roebuck & Co., 7 Ct. Cust. Appls. 60, of 1916); nor is it necessary to its classification as a musical instrument that the article shall be capable of producing a complete tune (U. S. *v.* Sears, Roebuck & Co., 9 Ct. Cust. Appls. ——, T. D. 37875, of 1918). The following among other articles, have been held to be musical instruments: Triangles of metal with a wooden-handled hammer or striker (United States *v.* Sears, Roebuck & Co., 7 Ct. Cust. Appls. 60, of 1916); cymbals (Abstract 43345, of 1919); jew's-harps (U. S. *v.* Sears, Roebuck & Co., —— Cust. Appls., ——, T. D. 37875, of 1918); castanets (T. D. 37368, of 1917); and wooden fish and brass gongs and wooden beaters (Abstract 43345, of 1919); but upon a fuller record, wooden fish, a block of hard wood having two deep narrow cavities carved therein so arranged and shaped that when struck successive blows with a hard instrument, as a hammer, it emits noises resembling the trotting of a horse on a hard pavement, was held not be a musical instrument (G. A. 8177, T. D. 37680, of 1918); also brass gongs (Abstract 40319, of 1916); and small wooden whistles known as "baby crys," used in orchestras or moving-picture shows to produce a sound like the crying of a baby (G. A. 7387, T. D. 32777, of 1912). "Parts of musical instruments" include violin and cello necks, unserviceable in the condition in which imported for any other use than as parts of musical instru-

ments (United States *v.* Lyon & Healy, 4 Ct. Cust. Appls. 438, of 1913); music rolls for a player piano known as the Welte Mignon (Welte & Sons *v.* United States, 5 Ct. Cust. Appls. 164, of 1914); organ keyboard case, although placed 20 feet from the closest part of the organ (Abstract 37318, of 1915); drum heads (United States *v.* Lyon & Healy, 4 Ct. Cust. Appls. 84, of 1913); violin bows (Abstract 39112, of 1916); violin finger boards, necks, pegs, and bridges (Richard & Co. et al. *v.* United States, 4 Ct. Cust. Appls. 470, of 1913); but does not include hollow, cylindrical wood and ivory not shown to be confined to use as parts of musical instruments (United States *v.* Lyon & Healy, 4 Ct. Cust. Appls. 438, of 1913), and violin mutes, which are composed of steel and used on the bridge of a violin to soften or deaden the sound (Abstract 38839, of 1915).

"Strings for musical instruments," provided for in this paragraph and paragraph 366, refers to strings used for the production of musical sounds and includes strings of the proper length designed for use in the production of musical tones upon certain musical instruments (Fischer *v.* United States, 5 Ct. Cust. Appls. 301, of 1914); and small catgut strings of different gauge or diameter, some from 45 to 68 inches in length and others from 23 to 45 inches, ready for immediate use as strings for musical instruments (Richard & Co. *v.* United States, 3 Ct. Cust. Appls. 306, of 1912). But strings composed of catgut wound with silk, silk chief value, are not included, but are dutiable under paragraph 318 as a manufacture in chief value of silk. (Fischer *v.* United States, 6 Ct. Cust. Appls. 443, of 1915.)

Phonograph disks are parts of phonographs within this paragraph (American Express Co. et al. *v.* United States, 4 Ct. Cust. Appls. 279, of 1913), as are needles for phonographs (Landay Bros. *v.* United States, 5 Ct. Cust. Appls. 498, of 1915). A phonograph motor complete with the exception of a mainspring, but ready for use in connection with other articles or parts of the phonograph outfit, was held to be a part of a phonograph within this paragraph (Abstract 42372, of 1918), but disks of soft wax, known as master records, in themselves neither intended for nor susceptible of use as parts of phonographs, graphophones, or gramophones, were held not within this paragraph, nor exempt from duty as models of improvements in the arts under paragraph 629, but dutiable under paragraph 462 as manufactures of wax (G. A. 7182, T. D. 31351, of 1911). Mica washers for gramophones are parts of gramophones. (Abstract 36977, of 1914.)

Under the act of 1883, when parts of musical instruments were not specially provided for, ivory piano keys were held dutiable as manufactures of ivory.

Under the act of 1890, musical instruments were classified according to the component material of chief value.

VIOLIN ROSIN.

For treatment, see paragraph 635.

UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPHS 370, 371, and 372 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

Paragraph 370:
Masks

Paragraph 371:
Matting and Mats Made of Cocoa Fiber or Rattan. (See par. 272.)

Paragraph 372:
Moss and Sea Grass, Eel Grass, and Seaweeds

Paragraph 377:
Peat Moss

Paragraph 378:
Lead and Slate Pencils

Paragraph 379:
Pencil Leads

Paragraph 552:
Moss, Seaweeds, and Vegetable Substances, crude

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this, industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act, reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and index," the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Guy G. George, of the Commission's staff, and of others.

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MASKS.

General Information.

1913 TARIFF PARAGRAPH.

Par. 370. Masks, of whatever material composed, 25 per cent ad valorem.

DESCRIPTION AND USES.

A mask may be defined as a covering or partial covering for the face, used for a disguise.

PRODUCTION, IMPORTS, AND EXPORTS.

There are no statistics available for domestic production nor for domestic exports. Imports are not stated by countries, but imports for consumption are given. Imports have only exceeded a total value of $10,000 in the fiscal years 1914 and 1915, while in other years they have been much less than $5,000 yearly (except in 1916, when they amounted to $5,688).

TARIFF CONSIDERATIONS.

There is no information available which leads to an indication of a tariff problem. The duty has varied from 25 per cent ad valorem to 35 per cent ad valorem.

Masks—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1907	35 per cent		$805	$282		35
1908	do		941	329		35
1909	do		860	301		35
1910	do		2,228	780		35
1911	do		1,754	614		35
1912	do		2,116	741		35
1913	do		4,413	1,545		35
1914 [1]	do		2,065	723		35
1914 [2]	25 per cent		10,410	2,602		25
1915	do		29,860	7,465		25
1916	do		5,688	1,422		25
1917	do		643	161		25
1918	do		738	184		25
1919	do		217	54		25
1920	do		311	77		25
1920 [3]	do		8,141	2,035		25
1921 [4]	do		4,804	1,201		25

[1] Prior to Oct. 3, 1913, "Composed of paper or pulp."
[2] After Oct. 3, 1913, "Of whatever material composed."
[3] Calendar year.
[4] 6 months ending June 30, 1920.

Masks—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1890	463	Masks, composed of paper or pulp	35 per cent ad valorem.
1894	355	.....do	25 per cent ad valorem.
1897	451	.....do	35 per cent ad valorem.
1909	465	.....do	Do.
1913	370	Masks, of whatever material composed	25 per cent ad valorem

MATS AND MATTING MADE OF COCOA FIBER OR RATTAN.

Paragraph 371, act of 1913, 25 per cent ad valorem. (For treatment see par. 272.)

MOSS AND SEAWEEDS.

SUMMARY.

It is estimated that about 700 cars, or about 14,000,000 pounds of domestically produced eelgrass, commonly called sea moss, are used annually in the United States, and in addition about 100 cars, or 2,000,000 pounds, of Canadian sea moss. The principal uses of this sea grass or sea moss are for mattress making and upholstery. Small amounts are used for wiping in the furniture trade, and larger amounts are used in paper making, probably about 2,000,000 pounds.

The domestic supply is collected during the summer along the New Jersey coast near Barnegat Bay. It is dried on the beach and put up for shipment in bales of about 200 pounds each, and loads about 20,000 pounds to the car.

The price in 1914 of domestic sea moss was $17.50 a short ton, f. o. b. New York. European sea moss, principally from Belgium and the Netherlands, sold in 1914 for $9.30 a long ton, f. o. b. New York.

Canadian sea moss has been selling for $10 to $15 a ton higher than the American product. It is collected along the St. Lawrence River.

The other principal class of moss included under paragraphs 372 and 552 is commonly known as "Irish" moss. In Japan it is called "kanten." It is collected to some extent in the United States along the New Hampshire and Massachusetts coasts, but it is not known that the collection is carried on as a commercial enterprise. The growth of kanten in Japan is quite an extensive industry. It is also collected along the rocky shores of the British Islands and continental Europe. It is used in the manufacture of food products—to thicken soups, jams, jellies, and ice cream—also in distilleries as a clarifying agent, in making sizing in the textile industry, in tanning, in the manufacture of medicines used in the treatment of throat and pulmonary affections, and in other ways. However, it is evidently not used in large quantities in the United States, since neither the import figures nor the statements of dealers indicate a large consumption of it.

Moss and seaweeds—Summary table.

Year.	Imports for consumption.[1]	Domestic exports.	Value (imports for consumption).[2]	Amount of duty.	Value per unit of quantity.
1910	$214,203	$81,314	$88,155	$8,816	([3])
1911	249,587	65,638	61,594	6,159	.....
1912	226,568	60,566	49,171	4,917	.....
1913	209,094	117,789	49,904	4,990	.....
1914	301,320	91,578	55,624	5,562	.....
1915	225,588	63,803	42,559	4,256	.....
1916	251,690	80,909	26,762	2,676	.....
1917	191,676	108,968	9,608	961	.....
1918	241,832	[4] 99,793	7,367	737	.....
1919	260,200	[5] 91,475	3,066	30	$0.605
1920	342,411	.....	11,453	114	.161
1920 [6]	496,121	115,346	15,282	1,528	.270
1921 [6]	228,511	.....	5,155	515	.....

[1] Free and dutiable combined.
[2] Dutiable imports only.
[3] Value per pound in 1909=$0.154.
[4] Exports of moss only after 1917, as seaweed is not stated separately after that year.
[5] Calendar years.
[6] 6 months ending June 30, 1921.

General Information.

1913 TARIFF PARAGRAPHS.

PAR. 372. Moss and sea grass, eelgrass, and seaweeds, if manufactured or dyed, 10 per cent ad valorem.

PAR. 552. Moss, seaweeds, and vegetable substances, crude or unmanufactured, not otherwise specially provided for in this section. Free.

DESCRIPTION AND USES.

The term "moss" covers a class of small herbaceous plants, being generally applied to a number growing together in a mass. The title is also popularly extended to similar growths of other types, particularly to some lichens and seaweeds.

Among the mosses valuable as food, the best known are Iceland moss, a lichen, Ceylon moss (kanten), and Irish moss (carragheen), the last two being seaweeds. "Moss" or "sea moss" farina is a prepared granulated food in which lichen or seaweed is the principal ingredient.

Iceland moss is a nutritious lichen gathered chiefly in Norway and Iceland, where it is often dried, ground into flour, and made into bread. Elsewhere it is generally made into a decoction or jelly and as such is considered a valuable article of diet for invalids and children and a useful and popular demulcent and emollient in throat and pulmonary affections. It contains about 80 per cent of lichen starch.

Kanten, otherwise known as Japanese gelatin, vegetable isinglass, agar agar, is prepared in great quantities in Japan from the Gelidium family of seaweed. It is pearly white, semitransparent, tasteless, and odorless, and is marketed in stick and block form—"slender kanten" and "square kanten." On analysis it shows about 60 per cent carbohydrates and 7 per cent protein.

Kanten is used by the Japanese in the preparation of jellies and soups and for clarifying saki or rice spirit. The kanten which is exported to the United States and Europe is used in the manufacture of food products—to thicken jams, jellies, and ice cream; in distilleries, and in the textile, silk, and other industries. Under the name of agar agar it is used in making culture media in bacteriological work.

Bengal isinglass, Ceylon moss, and Chinese moss are similar related products.

Gelidium seaweed grows abundantly on the Pacific coast of the United States and at some points along the Atlantic, and apparently offers a good opportunity for the manufacture of domestic vegetable isinglass.

Carragheen, Irish moss, or pearl moss, is a species of edible seaweed named after the town of Carragheen, near Waterford, Ireland. It is found on the coast of the British Islands, the rocky shores of continental Europe, and the eastern shores of the northern United States and Canada.

The carragheen of domestic use is obtained principally from New Hampshire and Massachusetts, the harvest season there extending from May to September. After gathering, the plants are washed in salt water and spread on the beach to dry and bleach, the process being repeated several times.

As marketed, carragheen is in pieces of from 2 to 3 inches to 1 foot in length, cartilaginous and flexible in texture, branching in shape, and in color from a reddish brown to straw color or white, varying with local differences in the plant and the extent of the bleaching. Formerly the greater part of the supply was employed in the clarifying of beer. It is used in the manufacture of food products similarly to kanten. It is also used by tanners in finishing leather and in the manufacture of oils.

Eelgrass or sea grass is a submerged plant with very long and narrow leaves which grows in abundance in shallow bays along the North Atlantic coast. It is also called barnacle grass and grass wrack. Sea grass is now used extensively in the upholstering business in place of excelsior, tow, jute fiber, and Florida grass. The season for gathering the grass is short, and the nature of the work necessitates the employment of experienced baymen. The grass is put up for market in bales of about 200 pounds.

DOMESTIC PRODUCTION.

It is estimated that about 600 cars, or 12,000,000 pounds, of sea moss of domestic production is consumed annually by the mattress and upholstery makers, while the paper makers use from 2,000,000 to 4,000,000 pounds. It is also estimated that Canadian moss to the amount of about 100 cars, or 2,000,000 pounds, is used annually in the United States. It is collected along the St. Lawrence River.

It is not known how much domestic Irish moss is collected, but it is thought that the quantity is not large, inasmuch as dealers report handling only small amounts.

Since imports are not segregated, it is impossible to determine whether they consist of Irish moss or eelgrass. However, it is known that the principal importation of Irish moss is from Japan and France, while eelgrass comes mainly from Canada, the Netherlands, and Belgium.

The domestic production of eelgrass is carried on quite extensively, but it is not known that there is any commercial collection of domestic Irish moss. There is practically no export. It appears, therefore, that imports and domestic products are both consumed. One of the dealers in eelgrass states that the supply is not sufficient to meet the demand.

DOMESTIC EXPORTS.

Domestic exports of seaweeds are very small, the highest value for the years recorded in this survey being $48,180 in the fiscal year 1913. Exports are now included in "All other articles."

FOREIGN PRODUCTION.

Production and preparation of seaweed in Japan.[1]—Between Yokohama and Tokyo, along the electric car line and not far distant from the seashore, there were to be seen in February very many long, fence-high screens extending east and west, strongly inclined to the north, and built out of rice straw, closely tied together and supported on bamboo poles carried upon posts of wood set in the ground. These screens, set in parallel series of five to ten or more in number and several hundred feet long, were used for the purpose of drying varieties of delicate seaweed, * * *.

The seaweed is first spread upon separate 10 by 12 inch straw mats, forming a thin layer 7 by 8 inches. These mats are held by means of wooden skewers forced through the body of the screen, exposing the seaweed to the direct sunshine. After becoming dry the rectangles of seaweed are piled in bundles an inch thick, cut once in two, forming packages 4 by 7 inches, which are neatly tied and thus exposed for sale as soup stock and for other purposes.

To obtain this seaweed from the ocean small shrubs and the limbs of trees are set up in the bottom of shallow water, * * *. To these limbs the seaweeds become attached, grow to maturity and are then gathered by hand. By this method of culture large amounts of important foodstuff are grown for the support of the people on areas otherwise wholly unproductive.

The Statistical Yearbook of Japan gives the production of "Kanten" for the year ending March, 1916, as 3,703,650 pounds, valued at $1,239,374; and in 1917 as 3,065,225 pounds, valued at $1,182,028.

IMPORTS.

Imports of unmanufactured moss and seaweeds have been much greater than imports of manufactured or dutiable moss and seaweeds. Imports of unmanufactured moss were valued at $127,008 in 1910 and $478,361 in 1920. The average value has been about $200,000 since 1910.

Imports of manufactured or dyed moss and seaweeds were valued at $89,802 in 1910, $54,376 in 1914, and $7,367 in 1918.

Imports of unmanufactured moss came principally from Canada, Japan, Germany, France, and British South Africa. Manufactured moss came principally from Germany, France, Japan, and the Netherlands.

PRICES.

In 1914 eelgrass from the Netherlands and Belgium sold at $9.30 a long ton f. o. b. New York. Domestic eelgrass sold for $17.50 a short ton f. o. b. New York. The wholesale price of domestic sea moss in 1919 was $35 a ton. It is predicted that the 1920 price will be $37.50 a ton in car lots, and $40 a ton in less than car lots. It is predicted that the 1920 price of Canadian moss will be $60 a ton.

TARIFF HISTORY.

The act of 1894 imposed a duty of 10 per centum ad valorem on sea moss or Iceland moss. The duty has remained the same since that time, but the wording of the provision has been changed. In

[1] Extract from "Farmers of Forty Centuries," by F. H. King. 1911

1897 sea moss alone was named. In 1909 the act added sea grass, eelgrass, and seaweeds, if manufactured or dyed. The act of 1913 made no change with respect to moss and seaweeds.

The acts of 1890, 1894, 1897, 1909, and 1913 exempted from duty "moss, seaweeds, and vegetable substances, crude or unmanufactured, not otherwise specially provided for."

COMPETITIVE CONDITIONS AND TARIFF CONSIDERATIONS.

The domestic producer of eelgrass faces competition at the present time from Canada. Since Canadian eelgrass sells, or it is predicted that it will sell in 1920, for $20 a ton more than domestic eelgrass, it would not appear that the two articles are exactly comparable, nor that they supply the same demand.

Since there is no known commercial production of Irish moss, this item presents no tariff problem.

Moss, seaweeds, and vegetable substances, n. e. s., crude or unmanufactured (free)—Imports by countries (fiscal years).

Imported from—	1910	1911	1912	1913	1914	1915
France	$13,080	$15,783	$7,985	$11,412	$23,546	$14,677
Germany	14,515	29,051	13,883	3,699	55,593	36,060
Italy	5,231	15,119	4,163	9,260	11,925	11,514
Netherlands	1,911	6,356	6,073	2,238	916	6,243
England	3,631	7,345	8,721	11,231	10,322	11,568
Canada	50,938	53,468	60,489	48,827	58,531	38,568
Mexico	15,306	16,418	4,985	37	2,241	380
China	2,060	2,701	3,371	9,716	3,510	8,705
Japan	18,521	27,367	34,072	23,354	29,685	34,667
British South Africa	373	6,599	21,531	29,834	35,027	11,585
All other	1,442	8,408	3,407	8,039	11,723	6,964
Total	127,008	188,615	168,680	157,547	243,019	180,931

Imported from—	1916	1917	1918	1918 [1]	1919 [1]	1920 [1]
France	$19,392	$20,654	$19,362	$19,824	$27,882	.....
Germany	207	132	.....	.....	62	.....
Italy	10,670	3,427	3,140	3,033	5,651	.....
Netherlands	3,911	531	379	.....	2,572	.....
England	1,965	4,730	5,304	2,254	43	.....
Canada	*59,338	84,095	66,488	56,269	58,730	.....
Mexico	6,934	8,251	16	11,864	4,600	.....
China	43,329	5,625	6,902	4,699	182	.....
Japan	36,526	42,845	94,364	101,144	211,640	.....
British South Africa	.....	.....	.....	.....	934	.....
All other	43,341	10,653	34,208	104,495	26,460	.....
Total	225,613	180,943	230,163	303,582	338,756	$478,361

[1] Calendar year.

Moss, seaweeds, and vegetable substances, n. e. s., all other manufactured or dyed (dutiable)—Imports by countries (fiscal years).

Imported from—	1910	1911	1912	1913	1914	1915
France	$7,251	$2,289	$1,290	$442	$1,425	$312
Germany	73,971	54,143	45,718	46,305	46,642	32,167
Netherlands	.....	4	17	1,381	4,611	4,962
Japan	7,357	3,990	357	20	255	20
All other	1,223	1,221	1,944	2,174	1,443	2,982
Total	89,802	61,647	49,326	50,322	54,376	40,443

Moss, seaweeds, and vegetable substances, n. e. s., all other manufactured or dyed (dutiable—Imports by countries (fiscal years)—Continued.

Imported from—	1916	1917	1918	1918 [1]	1919 [1]	1920 [1]
France	$495	$333	$1,056	.....	$347	.....
Germany	1,578	603	.....	.....	1,672	.....
Netherlands	20,562	5,024	1,052	.....	18,212	.....
Japan	2,163	2,162	3,996	$1,887	930	.....
All other	2,695	3,594	1,263	442	1,228	.....
Total	27,493	11,716	7,367	2,329	22,389	$52,544

[1] Calendar years.

Moss, seaweeds, etc., crude or unmanufactured, n. s. p. f. (free)—Imports for consumption.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				
1907	Free	.....	$91,863	.....	.....	.....
1908	do	.....	67,881	.....	.....	.....
1909	do	.....	84,263	.....	.....	.....
1910	do	.....	126,048	.....	.....	.....
1911	do	.....	187,993	.....	.....	.....
1912	do	.....	177,397	.....	.....	.....
1913	do	.....	159,190	.....	.....	.....
1914	do	.....	246,196	.....	.....	.....
1915	do	.....	183,029	.....	.....	.....
1916	do	.....	224,928	.....	.....	.....
1917	do	.....	182,068	.....	.....	.....
1918	do	.....	234,465	.....	.....	.....
1919	do	13,291,917	257,134	.....	$0.019	.....
1920	do	4,728,051	330,958	.....	.070	.....
1920 [1]	do	7,929,129	480,839	.....	.065	.....
1921 [2]	do	2,981,570	223,356	.....	.....	.....

[1] Calendar year. [2] Six months ending June 30, 1921.

Moss, seaweeds, etc., manufactured or dyed (dutiable)—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1907	10 per cent	218,577	$17,567	$1,757	$0.08	10
1908	do	453,213	37,884	3,788	.083	10
1909	do	309,923	47,770	4,777	.154	10
1910	do	.....	88,155	8,816	.....	10
1911	do	.....	61,594	6,159	.....	10
1912	do	.....	49,171	4,917	.....	10
1913	do	.....	49,904	4,990	.....	10
1914	do	.....	55,624	5,562	.....	10
1915	do	.....	42,559	4,256	.....	10
1916	do	.....	26,762	2,676	.....	10
1917	do	.....	9,608	961	.....	10
1918	do	.....	7,367	737	.....	10
1919	do	5,060	3,066	30	.605	10
1920	do	70,866	11,453	114	.161	10
1920 [1]	do	56,400	15,282	1,528	.270	10
1921 [2]	do	16,389	5,155	515	.....	10

[1] Calendar year. [2] Six months ending June 30, 1921.

Moss—Domestic exports (fiscal years).

Exported to—	1909	1910	1911	1912	1913
Germany	2,831	670	1,450	1,582	100
Greece					
Canada	30,026	29,024	36,331	27,518	48,099
Cuba	1,346	1,436	1,916	1,530	3,208
Hongkong					
All other	5,081	10,113	11,748	3,894	18,202
Total	39,284	41,243	51,445	34,524	69,609

Moss—Domestic exports (fiscal years).

Exported to—	1914	1915	1916	1917	1918
Germany	$1,098				
Greece					$9,358
Canada	$2,663	$30,638	$48,250	$76,937	67,074
Cuba	2,648	2,366	3,912	4,170	5,924
Hongkong					14,457
All other	14,597	3,734	2,558	1,774	2,980
Total	51,006	36,738	54,720	82,881	99,793

Exported to—	1918 [1]	1919 [1]	1920 [1]
Canada	$71,110	$72,299	
Cuba	3,863	9,974	
Hongkong	14,477	2,997	
All other	2,217	6,205	
Total	91,667	91,475	$115,346

[1] Calendar year.

Seaweed [1]—Domestic exports (fiscal years).

Exported to—	1910	1911	1912	1913	1914	1915	1916	1917
Hongkong	$40,071	$14,181	$26,017	$48,148	$40,561	$26,827	$25,221	$23,317
All other		12	25	32	11	238	968	2,772
Total	40,071	14,193	26,042	48,180	40,572	27,065	26,189	26,087

[1] Included in "All other articles" after 1917.

Moss and seaweeds—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	744	Moss, seaweeds, and all other vegetable substances used for beds and mattresses.	Free.
1883	777	Sea-weed, not otherwise provided for	Do.
1890	653	Moss, sea-weeds, and vegetable substances, crude or unmanufactured, not otherwise specially provided for in this act.	Do.
1894	69	* * * sea moss or Iceland moss	10 per cent ad valorem.
1894	558	Moss, seaweeds, and vegetable substances, crude or unmanufactured, not otherwise specially provided for in this act.	Free.
1897	81	Sea moss	10 per cent ad valorem.
1897	617	Moss, seaweeds, and vegetable substances, crude or unmanufactured, not otherwise specially provided for in this act.	Free.
1909	78	Moss and sea grass, eelgrass, and seaweeds, if manufactured or dyed.	10 per cent ad valorem.
1909	630	Moss, seaweeds, and vegetable substances, crude or unmanufactured, not otherwise specially provided for in this section.	Free.
1913	372	Moss and sea grass, eelgrass, and seaweeds, if manufactured or dyed.	10 per cent ad valorem.
1913	552	Moss, seaweeds, and vegetable substances, crude or unmanufactured, not otherwise specially provided for in this section.	Free.

COURT AND TREASURY DECISIONS.

Paragraph 372.—Moss dyed, prepared for florists' use and for ornamental purposes, was held not exempt under the act of 1894 as crude moss. (G. A. 3146, T. D. 16317; G. A. 3384, T. D. 16956, of 1895.) Sea moss which had been dyed for the purpose of preserving its natural form and color, such dyeing not changing its name or character, was held to come within the provision for sea moss in paragraph 81 of the act of 1897. (G. A. 6464, T. D. 27670, of 1906.) Wreaths made of natural rock moss, dyed and prepared, were held dutiable as moss manufactured or dyed under the act of 1909. (Abstract 26020, T. D. 31744, of 1911.)

Paragraph 552.—The term vegetable substances as used in paragraph 552 of the act of 1913 was interpreted not to be limited to articles that are strictly ejusdem generis with moss and seaweeds, and birch bark in the condition as stripped from the tree was held not to come within the provision and to be dutiable as an unenumerated unmanufactured article. (Reed *v.* United States, 5 Ct. Cust. Appls., 95, of 1914.) Lily of the valley roots in bunches and in part having sprouts or crowns thereon, imported for forcing, were also held not to be exempt as vegetable substances but to come within the provision for "Lily of the valley and other plants used for forcing under glass for cut flowers," etc. (McAlester *v.* United States, 147 Fed., 773.) Seaweed carrageen, known as Irish moss, was held dutiable as sea moss. (G. A. 3459, T. D. 17078, of 1896.) Sea grass used in the manufacture of mattresses and for upholstery purposes, etc., was held exempt from duty as vegetable substances and not dutiable as sea moss. (G. A. 5480, T. D. 24788, of 1903.) Seaweeds, dried, known as nori and hashinori, with nothing added to change their character, and packed in tin boxes as a convenient method of getting the products to market, were held exempt from duty as crude seaweeds and not dutiable as vegetables by reason of being edible. (United States *v.* Ohashi, 7 Ct. Cust. Appls., 487 and 495, of 1917; United States *v.* Furuya, G. A. 8272, T. D. 38072, of 1919; G. A. 8273, T. D. 38073, of 1919; G. A. 8339, T. D. 38411; Abstracts 43600, 43710, 43711, 43720, and 43721, of 1920.)

Natural sun bleached wheat stems and heads, tied into small bundles, for use as semifloral ornaments or emblems, are exempt from duty under this paragraph as a crude or unmanufactured vegetable substance, or under paragraph 497 as textile grasses or fibers, and not dutiable under paragraph 385 as unenumerated manufactured articles. (United States *v.* Rice, 9 Ct. Cust. Appls., 165, of 1919.) But customs officers were instructed by the Treasury Department to continue the assessment of duty on such articles, pending a furthe judicial determination of the matter. (T. D. 38025, of 1919. Bleached wheat and ruscus leaves were subsequently held by the Board of General Appraisers exempt from duty. (Abstracts 43871 44025, and 44027, of 1920.) Merchandise invoiced as grass strings' and classified as manufactures of grass under paragraph 368 were held exempt from duty under this paragraph as crude vegetable substances. (Abstract 41292, of 1917.) Musgo was held exempt as a moss. (Abstract 38787, of 1915.) Dried sea moss, known as asakusa nori, was held exempt from duty as a crude seaweed, and

not dutiable as a prepared vegetable; following G. A. 8272, T. D. 38072, and G. A. 8273, T. D. 38073. (T. D. 38411, of 1920.)

Dried stypa grass and avoine in a natural state were held to come within paragraph 552 of the act of 1913 because of judicial construction of prior acts impliedly approved by Congress in reenacting the law. (United States *v.* Post, 3 Ct. Cust. Appls., 260, of 1912.) Horseradish roots are vegetable substances unmanufactured rather than vegetables for tariff purposes. (United States *v.* Wallace, 4 Ct. Cust. Appls., 142, of 1913; United States *v.* Nix, 4 Ct. Cust. Appls., 145, of 1913.)

Merchandise invoices as coconut parings, used in the manufacture of coconut oil, classified as waste under paragraph 384 of the act of 1913, were held exempt from duty as a crude vegetable substance under paragraph 552. (Abstract 43972, of 1920.) Rice bran, shorts, and middlings, by-products in the scouring or cleaning of rice, come within paragraph 385 of the act of 1913 as unenumerated articles and not within paragraph 552. (G. A. 8121, T. D. 37471, of 1917; affirmed without opinion, T. D. 38242, of 1918.)

PEAT MOSS.

GENERAL INFORMATION.

1913 TARIFF PARAGRAPH.

PAR. 377. Peat moss, 50 cents per ton.

Peat moss is a dry, fibrous, matted substance taken from the surface of a peat bog. It is a sanitary stable dressing, noncombustible, and acts as a deodorant. It is used in the manufacture of stuffing for horses' hoofs. It may also be used as stuffing for mattresses.

Peat moss is imported almost wholly from the Netherlands, although a little is imported from Germany and Belgium. Great fields of it are found in certain districts of the Netherlands. It extends from the surface of the earth to a depth of 6 to 10 feet, and under the moss peat is found to a depth of 12 feet. The fields are drained of water, after which the moss is taken out in blocks with spades and brought to the factories in flatboats. It is then dried and pressed into bales weighing about 200 pounds each.

There is no known domestic production of peat moss. An attempt was made to manufacture peat moss for stable purposes at Garrett, Ind., but that project is reported to have been abandoned. In the tariff hearings of 1897 it was claimed that a peat-moss industry could be built up in Wisconsin if sufficient protection against the foreign product was granted. A tariff of $1 per ton was imposed in 1897 and retained until 1913, and yet no industry manufacturing peat moss for the purposes indicated had been developed. It was reported that the Wisconsin moss was being used in paper making.

Before the war the average yearly importation amounted to about 8,000 tons, valued at from $5 to $6 per ton. It was stated before the Committee on Ways and Means that the amount imported before duty was imposed on peat moss was about 15,000 tons yearly. The revenue derived from the import is very small.

Peat moss—Summary table.

Year.	Imports for consumption.	Value of imports for consumption.	Amount of duty.	Value per unit of quantity.	Equivalent ad valorem rate.
	Tons.				*Per cent.*
1910	7,878	$43,143	$7,878	$5.48	18.26
1911	8,275	42,052	8,275	5.08	19.68
1912	8,390	40,411	8,390	4.81	20.76
1913	9,081	47,799	9,081	5.26	19.00
1914	9,580	57,670	5,663	6.05	9.82
1915	7,215	49,141	3,607	6.81	7.34
1916	4,442	38,562	2,221	8.68	5.76
1917	1,908	18,438	954	9.66	5.17
1918	126	1,147	63	9.10	5.49
1919 [1]					
1920	1,242	28,979	621	23.33	2.14
1920 [2]	2,466	36,201	1,233	14.68	3.41
1921 [3]	1,668	11,892	834		

[1] No imports in 1919. [2] Calendar year. [3] Six months ending June 30, 1921.

Peat moss—Imports by countries (fiscal years).

Year.	Netherlands.		All other.		Total.	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
1910	7,747	$42,354	125	$728	7,872	$43,082
1911	8,186	41,541	91	511	8,277	42,052
1912	8,305	39,963	88	438	8,393	40,401
1913	9,012	48,321	61	392	9,073	48,713
1914	8,975	53,473	682	4,767	9,657	58,240
1915	6,927	46,976	287	2,322	7,214	49,298
1916	4,420	37,823	51	739	4,471	38,562
1917	1,906	18,396	2	42	1,908	18,438
1918 [1]	123	1,096	3	51	126	1,147

[1] Not stated separately after 1918. See imports for consumption for those years.

Peat moss—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Tons.				Per cent.
1907	$1 per ton	7,605	$44,671	$7,605	$5.87	17.02
1908	do	8,288	48,222	8,288	5.82	17.19
1909	do	8,376	46,309	8,376	5.53	18.09
1910	do	7,878	43,143	7,878	5.48	18.26
1911	do	8,275	42,052	8,275	5.08	19.68
1912	do	8,390	40,411	8,390	4.81	20.76
1913	do	9,081	47,799	9,081	5.26	19.00
1914 [1]	do	1,746	10,684	1,746	6.11	16.34
1914 [2]	50 cents per ton	7,834	46,986	3,917	5.99	8.34
1915	do	7,215	49,141	3,607	6.81	7.34
1916	do	4,442	38,562	2,221	8.68	5.76
1917	do	1,908	18,438	954	9.66	5.17
1918	do	126	1,147	63	9.10	5.49
1919 [3]	do					
1920	do	1,242	28,979	621	23.33	2.14
1920 [4]	do	2,466	26,201	1,233	14.68	3.41
1921 [5]	do	1,668	11,892	834		

[1] Act of 1909.
[2] Act of 1913.
[3] No imports 1919.
[4] Calendar year.
[5] Six months ending June 30, 1921.

Peat moss—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1897	455	Peat moss	$1 per ton.
1909	471	do	Do.
1913	377	do	50 cents per ton.

Court and Treasury Decisions.

Under the act of 1883 before specific provision was made, peat moss was at first held dutiable as an unenumerated unmanufactured article (T. D. 5782, of 1883), but in 1899 the Circuit Court of the Southern District of New York held that it was exempt from duty under the provision for crude nonedible mosses. (Strohmeyer *v.* Magone, T. D. 21545.)

The provision for peat moss in the act of 1897 was held by the Board of General Appraisers to include moss fiber picked by hand from peat and used for filling mattresses. (G. A. 4535, T. D. 21545, of 1899.)

PENCILS AND PENCIL LEADS.

SUMMARY.

The war has left the American pencil industry in a very favorable condition. Exports for the calendar year 1920 reached a total value of $3,849,221, while imports were valued at $225,578. The exact increase in production since the last census is not known, but has been quite large. The value of products of the industry in 1914 was $8,328,000, while exports in that year amounted to only a little over $500,000. The increase in exports alone would account for a large increase in domestic production.

There were 14 establishments engaged in pencil making in 1914, capitalized at $16,670,000, and employing an average of 4,330 wage earners. Thirteen of the fourteen establishments were corporations. Of the total number of wage earners, 53.5 per cent were women, 44.5 per cent were men, and 2 per cent were under 16 years of age. New York and New Jersey each had 4 establishments; Pensylvannia, 2; Rhode Island, 1; Kansas, 1; Illinois, 1; Georgia, 1.

The industry has developed mainly since 1890, when the value of products for the first time exceeded $1,000,000. The United States has abundant supplies of graphite suitable for making pencil leads, and is one of the principal sources of pencil cedar. An American-owned Mexican mine furnishes an excellent grade of fine-grained graphite.

The American manufacturer of pencils is not now suffering serious competition. Germany, regarded as the most serious competitor before the war, is not now in a favorable competitive position. Her stocks of cedar are depleted and new supplies are difficult to secure. The output has been curtailed on account of the lack of fuel, shorter hours of work, higher wages, and decreased production per hour. White woods are being used and the quality of the product is poor. This situation is no doubt only temporary, but it will be some time before the German pencil makers can fully recover. Imports from Germany before the war were not over $300,000 in value, except in the year 1914, when that amount was slightly exceeded. Total imports for consumption in 1914 reached a high mark of $627,957.

Japan is beginning the manufacture of pencils, but the quality of the product has not been such as to attract the American trade. Danish pencils of good quality are being imported in small quantities, but their price is equal to the American prices, if not higher. Pencils from L. & C. Hardtmuth, now of the new Republic of Czechoslovakia, are being received in small quantities. They sell on the basis of established quality and reputation and their status would probably not be much affected by changes in the tariff, unless the rates were made prohibitive.

Pencils and pencil leads (including slate pencils)—Summary table.

Year.	Domestic production.	Imports for consumption.	Domestic exports.	Ratio to production.		Value (imports for consumption).	Amount of duty.	Equivalent ad valorem rate.
				Imports.	Exports.			
				Per cent.	*Per cent.*			
1910	[1] $7,379,000	$548,465	$380,315	7.43	5.15	$548,465	$193,594	35.29
1911	.....	511,752	498,203	.....	.....	511,752	187,458	36.63
1912	.....	536,514	448,962	.....	.....	536,514	192,592	35.96
1913	.....	548,072	625,548	.....	.....	548,072	195,314	35.64
1914	8,328,000	627,957	533,944	7.54	6.41	627,957	160,648	25.58
1915	.....	472,254	649,658	.....	.....	472,254	112,898	23.91
1916	.....	132,067	1,436,015	.....	.....	132,067	27,674	20.95
1917	.....	7,818	2,188,779	.....	.....	7,818	2,995	38.31
1918	.....	6,606	2,748,129	.....	.....	6,606	3,095	46.85
1919 [2]	.....	34,429	3,565,347	.....	.....	34,429	9,647	26.80
1920 [2]	.....	208,527	3,849,221	.....	.....	208,527	47,286	22.67

[1] Census of 1909. [2] Calendar year.

General Information.

Tariff paragraphs of 1913:

378. Pencils of paper or wood, or other material not metal, filled with lead or other material, pencils of lead, 36 cents per gross, but in no case shall any of the foregoing pay less than 25 per cent ad valorem; slate pencils, 25 per cent ad valorem.

379. Pencil leads not in wood or other material, 10 per cent ad valorem.

DOMESTIC PRODUCTION.

Size and importance of the industry.—In 1914 there were 14 establishments engaged in the manufacture of lead pencils, capitalized at $10,670,000, employing 4,330 wage earners, and producing an output valued at $8,328,000.

Materials.—The principal materials used in the manufacture of lead pencils are graphite and clay, used in making the lead, and cedar, used for making the cases. The United States is favored with an abundant supply of graphite of suitable quality for this use, which is found in several States. An American-owned Mexican mine, which produces an excellent grade of amorphous or fine-grained graphite, augments the supply found in the United States. The United States is one of the principal sources of cedar used in pencil making.

Colored pencils are made of chalk, clay, or wax, mixed with coloring pigments. Indelible or copying pencils are made from a mixture of graphite and aniline coloring matter.

Methods of production.—Pencil leads are made from a mixture of carefully graded fine-grained graphite and the finest clay. The hardness of the pencil depends upon the amount of clay used, but for the medium grade the proportions are about 7 parts of clay to 10 parts of graphite, by weight. The wet mixture is ground between stones many times, in order to eliminate the grit from the leads. After grinding, the water is forced out of the mixture by pressure until it becomes a thick dough. It is then pressed through dies or small holes the shape and size desired for the leads, and after being dried and cut into lengths is packed into crucibles and burned for several hours.

The wood used, which is usually cedar, although pine or other wood is sometimes used for the cheaper grades of pencils, is cut into little

slabs of pencil length and usually of sufficient width for the halves of six pencils. The slabs are smoothed and grooved to receive the leads by the pencil manufacturer. The leads are then placed in the grooves and the two strips are glued together. The united strips are dried and then cut into separate pencils, after which they are polished, varnished or painted, stamped, and packed for shipment, practically all of this work being carried on with the aid of mechanical equipment. The lead is also sometimes inclosed in paper.

Except in the lead making, the various processes in pencil manufacture are largely automatic and are carried on with machinery. More women than men are employed. The following table shows the percentage of men, women, and children employed as wage earners for comparative census years:

Year.	Per cent of total wage earners.		
	Men.	Women.	Under 16 years of age.
1914	44.5	53.5	2.0
1909	41.8	50.9	7.4
1904	41.8	52.4	5.7

Organization.—The corporate form of ownership predominated in the pencil industry in 1914, 13 of the 14 establishments reported being corporations, capitalized at a total of $16,670,000, or an average individual capitalization of $1,282,000.

Geographical distribution.—New York and New Jersey each have 4 of the 14 establishments manufacturing lead pencils. Other States with the number of establishments reported in 1914 were: Pennsylvania, 2; Rhode Island, 1; Kansas, 1; Illinois, 1; Georgia, 1.

History of the industry.—The present method of manufacturing lead pencils by mixing the graphite with clay was originated by Conté, a Frenchman, about 1800. The process was really perfected by the Germans. The manufacture of lead pencils was first established in the United States by representatives of the Fabers, of Germany, in 1861. In 1865 two other American pencil companies were established. The Joseph Dixon Crucible Co. attempted the manufacture of pencils as early as 1830, but did not meet with success at that time. However, in 1872 they again undertook the manufacture of pencils and met with success. As elsewhere stated, the necessary materials for pencil manufacture are found in abundance in the United States.

Domestic production and consumption.—There has been a steady growth in the value of products of the industry, as shown by the following table:

Census year.	Establishments.	Value of products.	Census year.	Establishments.	Value of products.
1860	6	$20,400	1900	7	$2,222,276
1870	8	180,000	1909	11	7,379,000
1880	4	279,427	1914	14	8,328,000
1890	5	1,627,560			

During the years immediately preceding the war the value of imports and exports practically balanced, at about 5 to 7 per cent of value of domestic products. Exports since the war have increased by leaps and bounds, from a value of $533,944 in 1914 to $2,748,129 in 1918. It is quite evident that domestic production is fully able to supply the domestic demand.

Domestic exports.—Exports of pencils and pencil leads have grown from a value of $380,315 in 1910 to $2,748,129 in 1918 (fiscal years), with the greater part of the increase occurring since the beginning of the war. Exports for the calendar year 1920 reached a total value of $3,849,221, while the value of imports was $208,527. Germany, the principal competitor of the United States, was cut off from her export trade during the war.

Exports from the United States went to England, Canada, the South American countries, and Australia. Nearly one-half of the value of exports in 1918 ($1,015,487) went to England alone, and $383,271 went to Canada.

FOREIGN PRODUCTION.

The import figures appear to indicate that pencils came principally from Germany and England. The pencils coming from England were, however, no doubt mostly transshipped from Austria, since it has been commonly recognized that L. & C. Hardtmuth have been the principal exporters to the United States, and since the import figures do not show large imports from Austria.

Japan is now undertaking the manufacture of pencils, and some pencils are made in Denmark. The quality of the Japanese pencils has not yet reached a high enough standard to cause much competition. Danish pencils are of good quality, but cost about the same or a little more than comparable American pencils.

The latest information from Germany leads to the conclusion that it will be a long time before her pencil makers can again offer serious competition. Cedar stocks are depleted and white woods are being used. The cedar is secured from the United States. German factories are short of fuel, wages have increased, and shorter hours of work prevail, with less production per hour, and the prices have increased from 300 to 600 per cent. Orders are taken only on the basis of prices at the time of shipment.

The "Kohinoor" pencils, made by L. & C. Hardtmuth, formerly of Austria, but now of the new Republic of Czechoslovakia, sell on the basis of quality and reputation and compete only with the very highest-priced goods. Their competition is not so much feared as that of the lower-priced German pencil. They have not been available to the American trade in large quantities since the war began.

IMPORTS.

Imports were practically constant in value during the years preceding the war, at about $500,000 annually, increasing to $642,998 in 1914. Since 1914 they have fallen off, until the value in the fiscal year 1918 was only $6,085. Imports for the calendar year 1920 were valued at $208,527.

Imports have come principally and almost entirely from Germany and England, in about equal amounts. However, the imports from England were no doubt largely transshipped from Austria.

PRICES.

Prices of domestic pencils are available, but there are scarcely any quotations available on foreign pencils, since almost none are being imported. The price of good quality imported pencils from Denmark is about the same as or a little higher to the dealer than American pencils of equal quality. German and Japanese pencils do not compare in quality with American, and are not being bought at the prices quoted. German pencils at the present time are made mainly of white woods and are not to be compared with her prewar pencils. It is stated by an American manufacturer, who returned from Germany about the end of the year 1919, that prices in Germany have advanced 300 to 600 per cent. Wholesale prices of American pencils have increased about 25 to 40 per cent over the prewar price.

TARIFF HISTORY.

Pencil leads have been assessed for duty since 1883 at 10 per cent ad valorem, except under the act of 1909. They were made dutiable at specific rates by that act at three-fourths of 1 cent per ounce for black lead, 1½ cents for colored lead, and 2 cents for copying lead.

Lead pencils were assessed for duty by the acts of 1883 and 1890 at 50 cents per gross and 30 per cent ad valorem. The act of 1894 omitted the specific rate of 50 cents per gross and assessed imports at 50 per cent ad valorem. The acts of 1897 and 1909 changed the rate to 45 cents per gross and 25 per cent ad valorem. The act of 1913 imposed a duty of 36 cents per gross, but in no case less than 25 per cent ad valorem.

COMPETITIVE CONDITIONS AND TARIFF CONSIDERATIONS.

The present situation appears to be quite favorable to the American pencil manufacturer. Imports for the calendar year 1919 were valued at $35,118, while exports reached a total value of $3,565,347. Before the war imports and exports practically balanced, with imports in excess of exports. The American export business has expanded remarkably since the beginning of the war, due no doubt to the fact that German exports to foreign markets were cut off.

German competition was the most serious prior to the war. At present the best information obtainable from Germany in December, 1919, leads to the conclusion that it will be quite a long time before German pencil makers can recover from the effects of the war. Prices have increased on pencils from 300 to 600 per cent, and orders are taken only on the basis of prices which may prevail at the time of shipment.

The principal causes for the enormous increase in prices for German pencils are given as follows: Stocks of cedar, which come from the United States, are depleted and the necessary import license to obtain new supplies is difficult to secure. The fuel situation has permitted plants to operate only part time. Wages have increased enormously, and hours of work have been reduced to eight a day, with a half day on Saturday, and the output per hour has decreased. Alder and pine are being used in place of cedar and these make a poorer quality pencil.

Japan has begun the manufacture of pencils, but so far the quality of the product has not been such as to offer serious competition in the American market.

Danish pencils of good quality are imported, but the price is not favorable.

"Kohinoor" pencils, made by L. & C. Hardtmuth, now of Czechoslovakia, are not now being imported in large quantities. They compete directly with the highest grade pencils, but not so much with the common pencils which make up the bulk of the trade. They sell on the basis of quality and established reputation.

The Pencil Manufacturers' Association has submitted a statement to the Tariff Commission containing proposed revisions of the paragraphs relating to pencils and pencil leads, of which the following are here noted:

PARAGRAPH 378, PENCILS.

(1) Pencils "not metal" should be omitted, and if lumber crayons or carpenters' pencils are intended by this term, they should be so specified or stated as mechanics' pencils. The suggested wording for the first part of the paragraph is: "Pencils of paper, wood, or other material, filled with lead or other material, and mechanics' pencils, * * *."

(2) The words "slate pencils" are not necessary if pencils in wood or paper are intended, since they would be included in the wording as it now stands. If slate pencils not in wood are intended, they should be so stated. It is suggested that slate pencils be included in paragraph 379.

(3) In addition to rates on pencils, the statement suggests that there should be levied certain cumulative duties: Caps or protectors whether separate or attached to pencils, pencils prepared for caps or protectors, and pencils stamped with names other than the manufacturer's. Just what is meant by a name other than the manufacturer's is not stated, but it would appear to prohibit the use of trade names on pencils, substituting therefor the maker's name. Concrete evidence that such increases in duty are required is not available and has not been submitted upon request of the Tariff Commission by the Pencil Manufacturers' Association.

(4) Substitute for paragraph 379: "Slate pencils not in wood, —— per centum ad valorem; pencil leads, if colored or black, —— per ounce and —— per centum ad valorem; copying —— per ounce and —— per centum ad valorem."

The argument presented by that association in support of a higher rate on pencil leads is that the duty on pencil leads ought to be increased in proportion to the duty on aniline, milori blue, vermilion, etc. The present rate on leads is 10 per cent ad valorem. The highest duty ever assessed on pencil leads was by the act of 1909 as follows: Black, three-fourths cent per ounce; colored, 1¼ cents per ounce; and copying, 2 cents per ounce.

The specific duties of the act of 1909 were objected to on the ground that they resulted in an exorbitant equivalent ad valorem duty, many times the former duty of 10 per cent ad valorem, and that it was an attempt to stifle the pencil makers who imported their leads.

Production in United States.

[From Federal census.]

Pencils, lead:	
1899	$2,222,276
1904	4,425,896
1909	7,378,744
1914	8,328,418

Pencils and pencil leads—Imports by countries (fiscal years).

	Austria-Hungary.	France.	Germany.	England.	All other.	Total.
1910	$720	$3,096	$218,745	$323,248	$2,742	$548,551
1911	828	1,027	228,377	262,302	2,181	494,725
1912	1,628	2,265	255,404	283,704	725	543,726
1913	722	2,929	254,980	295,143	1,143	554,917
1914	147	3,506	356,331	279,908	3,106	642,998
1915	36,814	1,683	287,774	92,623	64,603	483,497
1916	68,872	2,031	41,778	3,088	4,313	119,582
1917	.....	578	.....	1,568	5,558	7,704
1918	.....	236	.....	749	5,100	6,085
1918[1]	.....	149	.....	1,061	5,359	6,569
1919[1]	368	163	27,289	762	6,526	35,118
1920[1]	.....	.....	.....	.....	.....	225,573

[1] Calendar years.

Pencils and pencil leads (including slate pencils)—Total imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1907	Various	.....	$622,077	$218,122	.....	35.06
1908	....do	.....	611,882	204,861	.....	33.40
1909	....do	.....	521,575	156,481	.....	30.00
1910	....do	.....	548,465	193,594	.....	35.29
1911	....do	.....	511,752	187,458	.....	36.63
1912	....do	.....	536,514	192,592	.....	35.96
1913	....do	.....	548,072	195,314	.....	35.64
1914	....do	.....	627,957	160,648	.....	25.58
1915	....do	.....	472,254	112,898	.....	23.91
1916	....do	.....	132,067	27,674	.....	20.95
1917	....do	.....	7,818	2,995	.....	38.31
1918	....do	.....	6,606	3,095	.....	46.85
1919[1]	....do	.....	34,429	9,647	.....	26.80
1920[1]	....do	.....	208,527	47,286	.....	.....
1921[2]	....do	.....	135,386	26,906	.....	.....

[1] Calendar year. [2] Six months ending June 30, 1921.

Pencil leads, not in wood or other material—Imports for consumption—Revenue.[1]

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1908	10 per cent	.....	$135,060	$13,506	.....	10
1909	....do	.....	148,027	14,802	.....	10
1910[2]	....do	.....	17,712	1,771	.....	10
1914	....do	.....	86,324	8,632	.....	10
1915	....do	.....	81,118	8,111	.....	10
1916	....do	.....	40,584	4,058	.....	10
1917	....do	.....	2,868	286	.....	10
1918	....do	.....	2,523	252	.....	10
1918[3]	....do	.....	2,190	219	.....	10
1919[3]	....do	.....	25,741	2,574	.....	10
1920[3]	....do	.....	39,892	3,989	.....	10
1921[4]	....do	.....	50,456	5,045	.....	10

[1] Previous to 1914, pencil leads, not in wood.
[2] July 1 to Aug. 5, 1909, under act of 1897.
[3] Calendar year.
[4] Six months ending June 30, 1921.

Pencil leads, not in wood or other material—Imports for consumption—Revenue.

BLACK.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Ounces.				*Per cent.*
1910	¾ cent per ounce	1,742,484	$65,648	$13,068	$0.038	19.91
1911	do	2,058,261	75,335	15,437	.037	20.49
1912	do	2,688,263	93,426	20,162	.035	21.58
1913	do	2,504,403	86,753	18,783	.035	21.65
1914 [1]	do	421,491	14,908	3,161	.035	21.20

COLORED.

1910	1½ cents per ounce	554,563	$11,122	$6,982	$0.020	62.33
1911	do	595,465	14,471	7,443	.024	51.43
1912	do	683,970	15,912	8,549	.023	53.73
1913	do	546,432	13,979	6,830	.026	48.86
1914 [1]	do	172,418	4,127	2,155	.024	52.22

COPYING.

1910	2 cents per ounce	131,106	$13,899	$2,622	$0.106	18.87
1911	do	72,600	7,714	1,452	.106	18.82
1912	do	129,022	12,588	2,580	.098	20.50
1913	do	136,947	12,662	2,738	.092	21.63
1914 [1]	do	36,593	3,787	731	.103	19.32

[1] July 1 to Oct. 3, 1913.

Pencils, paper or wood, or other material not metal, filled with lead or other material, and pencils of lead—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Gross.				*Per cent.*
1908	45 cents per gross, plus 25 per cent.	157,012	$468,813	$187,859	$2.98	40.06
1909	do	105,672	367,711	139,480	3.48	37.93
1910	do	128,277	434,678	166,394	3.39	38.28
1911	do	128,270	408,103	159,747	3.18	39.14
1912	do	126,611	410,601	159,625	3.24	38.88
1913	do	127,580	430,137	164,945	3.37	38.35
1914 [1]	do	27,874	92,775	35,737	3.33	38.52
1914 [2]	36 cents per gross	54,443	64,721	19,599	1.19	30.28
1915	do	62,933	62,615	22,655	.99	36.18
1916	do	4,771	3,890	1,717	.81	44.15
1917	do	5,214	1,625	1,877	.31	115.51
1918	do	7,040	2,851	2,534	.40	88.88
1918 [3]	do	11,696	3,509	4,211	.30	119.96
1919 [3]	do	17,076	4,984	6,147	.29	123.35
1920 [3]	do	15,556	17,846	5,600	1.14	31.38
1921 [4]	do	12,542	15,570	4,525	.....	.....

[1] July 1 to Oct. 3, 1913.
[2] Oct. 4, 1913 to June 30, 1914.
[3] Calendar year.
[4] Six months ended June 30, 1921.

Pencils, others, on which specific duty does not amount to 25 per cent—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Gross.				*Per cent.*
1914	25 per cent	106,251	$355,080	$88,770	$3.34	25
1915	do	103,822	325,319	81,329	3.13	25
1916	do	18,645	87,492	21,873	4.69	25
1917	do	728	3,283	820	4.51	25
1918	do	395	1,227	306	3.11	25
1918 [1]	do	327	1,306	327	3.993	25
1919 [1]	do	1,182	2,695	673	2.28	25
1920 [1]	do	59,476	150,789	37,697	2.53	25
1921 [2]	do	26,893	69,182	17,295		25

[1] Calendar year. [2] Six months ended June 30, 1921.

Slate pencils—Imports for consumption—Revenue.

COVERED WITH WOOD.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Gross.				*Per cent.*
1908	35 per cent	2,302	$602.00	$210.00	$0.262	35.00
1909	do	203	60.00	21.00	.296	35.00
1910	do	167	51.00	17.00	.305	35.00
1911	do	200	18.00	6.00	.090	35.00
1912	do	165	20.00	7.00	.121	35.00
1913	do	2,204	222.00	77.00	.101	35.00
1914 [1]	do	850	83.00	29.00	.098	35.00

OTHERS.

		Hundreds.				
1908	3 cents per hundred.	92,855	$7,407.00	$2,785.00	$0.079	37.60
1909	do	72,571	5,776.00	2,177.00	.080	37.69
1910	do	92,910	5,355.00	2,787.00	.058	52.05
1911	do	112,374	6,111.00	3,371.00	.054	55.16
1912	do	55,579	3,967.00	1,667.00	.071	42.03
1913	do	64,609	4,319.00	1,938.00	.067	44.88
1914 [1]	do	21,587	1,416.00	647.00	.066	45.74

[1] July 1 to Oct. 3, 1913.

ALL KINDS.

		Gross.				
1914 [1]	25 per cent		$4,735.00	$1,183.00		25.00
1915	do		3,202.00	800.00		25.00
1916	do		101.00	25.00		25.00
1917	do		42.00	10.00		25.00
1918	do		5.00	1.00		25.00
1918 [2]	do		3.00	.75		25.00
1919 [2]	do	844	1,009.00	252.00	1.798	25.00
1920 [2]	do					
1921 [3]	do		178.00	44.50		25.00

[1] Oct. 4, 1913, to June 30, 1914. [3] Six months ended June 30, 1921.
[2] Calendar year.

Pencils (except slate) and pencil leads—Domestic exports (fiscal years).

Exported to—	1910	1911	1912	1913	1914	1915
England	$41,093	$183,281	$147,920	$170,118	$184,896	$283,597
Canada	138,402	48,249	54,453	166,207	145,437	162,277
Mexico	58,657	54,808	62,590	89,921	23,326	5,905
Cuba	30,074	49,554	38,536	55,493	47,824	55,663
Argentina	4,888	9,728	6,274	11,449	6,869	16,806
Brazil	8,501	9,768	10,664	13,352	6,598	5,377
Chile	5,080	6,978	16,936	4,825	3,641	1,224
Peru	1,891	2,319	2,868	3,340	3,940	1,828
Japan	20,565	60,000	25,089	20,135	1,151	201
Australia	6,727	12,113	11,493	13,180	19,662	16,320
Philippine Islands	21,628	12,287	21,233	26,532	26,940	28,743
All other	42,809	49,118	50,906	50,996	63,660	71,717
Total	380,315	498,208	448,962	625,548	533,944	649,658

Exported to—	1916	1917	1918	1918 [1]	1919 [1]	1920 [1]
England	$703,630	$1,007,469	$1,015,487	$542,720	$1,062,888	.....
Canada	261,011	372,002	383,271	425,927	415,926	.....
Mexico	29,230	83,535	121,475	104,154	207,573	.....
Cuba	75,108	95,781	133,987	127,177	192,600	.....
Argentina	83,422	127,778	152,290	166,069	182,049	.....
Brazil	39,491	100,653	149,362	110,741	202,637	.....
Chile	6,709	34,063	73,231	58,198	49,251	.....
Peru	8,051	21,297	40,817	26,806	27,479	.....
Japan	8,142	22,492	33,396	50,740	70,552	.....
Australia	31,258	37,166	98,042	155,157	180,500	.....
Philippine Islands	48,118	48,155	98,492	96,525	140,957	.....
All other	141,845	238,388	448,279	.....	.....	.....
Total	1,436,015	2,188,779	2,748,129	2,497,208	3,565,347	3,849,221

[1] Calendar year.

Pencils—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	131	* * * Slate pencils, * * *	30 per cent ad valorem.
1883	473	Pencils of wood filled with lead or other material and pencils of lead.	50 cents per gross and 30 per cent ad valorem.
1890	466	.....do	Do.
		Slate pencils	4 cents per gross.
1894	357	Pencils of wood filled with lead or other material and slate pencils covered with wood.	50 per cent ad valorem.
		All other slate pencils	30 per cent ad valorem.
1897	456	Pencils of paper or wood filled with lead or other material, and pencils of lead.	45 cents per gross and 25 per cent ad valorem.
		Slate pencils covered with wood	35 per cent ad valorem.
		All other slate pencils	3 cents per hundred.
1909	472	Pencils of paper or wood, or other material not metal, filled with lead or other material, and pencils of lead.	45 cents per gross and 25 per cent ad valorem.
		Slate pencils covered with wood	35 per cent ad valorem.
		All other slate pencils	3 cents per hundred.
1913	378	Pencils of paper or wood, or other material not metal, filled with lead or other material, pencils of lead, but in no case shall any of the foregoing pay less than.	36 cents per gross and 25 per cent ad valorem.
		Slate pencils	25 per cent ad valorem.
1883	473	* * * Pencil leads not in wood	10 per cent ad valorem.
1890	467	Pencil leads not in wood	Do.
1894	358	.....do	Do.
1897	457	.....do	Do.
1909	473	Pencil leads not in wood, or other material, black	Three-fourths of 1 cent per ounce.
		Colored	1½ cents per ounce.
		Copying	2 cents per ounce.
1913	379	Pencil leads not in wood or other material	10 per cent ad valorem.

COURT AND TREASURY DECISIONS.

Wood-covered slate pencils were held dutiable as slate pencils and not as pencils of wood under the act of 1890, which, like the act of 1913, imposed one rate of duty on all slate pencils. (G. A. 2582, T. D. 15005, of 1894; G. A. 3826, T. D. 17951, of 1897.)

Crayon pencils were held dutiable as pencils of wood and not as crayons. (G. A. 2722, T. D. 15221; In re Blumenthal, 49 Fed., 226, of 1892.)

Soap pencils intended for cleaning spectacles and eyeglass lenses have been held not to come within the provision for pencils of paper or wood, filled with lead or other material, and pencils of lead, etc., but dutiable as unenumerated manufactured articles. (United States *v.* American Express Co., 136 Fed., 594, of 1905.)

Fancy pencils of wood filled with lead, having fitted at one end a diminutive crooked handle resembling the handle of a cane and upon the other end a metal cap protecting the point, have been held dutiable as lead pencils. (G. A. 6006, T. D. 26245, of 1905.)

In reenacting in successive tariff acts in substantially the same words the provision for lead pencils, Congress sanctioned the administrative and judicial construction which rated them and their holders separately for dutiable purposes. Wooden lead pencils with metal holders are accordingly not dutiable as entireties; the pencils come within this paragraph, but the holders as metal articles under paragraph 167. (United States *v.* Borgfelt, 7 Ct. Cust. Appls., 367, of 1916.) Pocket pencils of metal and celluloid, in chief value of celluloid, were held dutiable at 25 per cent under this paragraph. (Abstract 39209, of 1916.)

Small red cylindrical sticks, a mixture of clay and grease with a lake consisting of oxide of lead with eosin red, designed to be inclosed in wood and used as pencils, were held dutiable as pencil leads and not as crayons, under the act of 1890. (G. A. 2457, T. D. 14735, of 1894.)

UNITED STATES TARIFF COMMISSION

WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPHS 368 and 369 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

Paragraph 368:

Manufactures of Chip, Grass, Palm Leaf, Quills, Straw, Weeds, Whalebone, India Rubber, or Gutta Percha (n. s. p. f.); **and Rubber Druggists's Sundries**

Manufactures of Bone, and Combs of Horn or Horn and Metal
(Treated paragraph 369)
See also paragraphs 274, 335, 502, 513

Paragraph 643:

Whalebone, unmanufactured

Paragraph 369:

Ivory and Manufactures of (n. s. p. f.)

Manufactures of Vegetable Ivory; Mother-of-pearl, Shell, and Papier-mâché (n. s. p. f.)

Paragraph 369—Continued

Manufactures of Plaster of Paris
(Treated paragraph 74)

Manufactures of Hard Rubber (n. s. p. f.; treated paragraph 368)

Paragraph 511:

Horns and Parts of

Paragraph 570:

Mother-of-pearl and Shell

Paragraph 628:

Teeth, Natural
See also, Paragraph 339

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for, and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and index" the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Joseph M. Donohoe, of the Commission's staff, and of others.

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MANUFACTURES OF CHIP, GRASS, HORN, PALM LEAF, QUILLS, STRAW, WEEDS, OR WHALEBONE, N. S. P. F.

General Information.

1913 TARIFF PARAGRAPHS.

PAR. 368. Manufactures of bone, chip, grass, horn, india rubber or gutta-percha, palm leaf, quills, straw, weeds, or whalebone, or of which any of them is the component material of chief value, not otherwise specially provided for in this section, shall be subject to the following rates: Manufactures of india rubber or gutta-percha, commonly known as druggists' sundries, 15 per centum ad valorem; manufactures of india rubber or gutta-percha, not specially provided for in this section, 10 per centum ad valorem; palm leaf, 15 per centum ad valorem; bone, chip, horn, quills, and whalebone, 20 per centum ad valorem; grass, straw, and weeds, 25 per centum ad valorem; combs composed wholly of horn or of horn and metal, 25 per centum ad valorem. The terms "grass" and "straw" shall be understood to mean these substances in their natural state and not the separated fibers thereof.

PAR. 369. * * * manufactures of * * * vulcanized india rubber known as "hard rubber," or of which these substances or any of them is the component material of chief value, not specially provided for in this section, 25 per centum ad valorem.

PAR. 643. Whalebone, unmanufactured.

Horn and manufactures of, and combs of horn or metal (treated under paragraph 369).

Manufactures of India rubber, druggists' sundries, and vulcanized rubber known as "hard rubber" (treated separately, see p. 9).

DESCRIPTION AND USES.

This paragraph includes a considerable variety of manufactures of chip, grass, palm leaf, quills, straw, weeds, and whalebone, the qualification n. s. p. f. not restricting narrowly the number of items. Among articles held dutiable are mats made of braids of straw sewn together with cotton; millinery ornaments consisting of natural straw twisted together loosely and looped or tied, used as centerpieces in the crowns of straw hats; palm-leaf baskets; baling twine consisting of two strands of grass braided; bottle covers and caps of palm leaf; and so-called paintings on straw mattings.

Horn and horn strips are used chiefly for making combs, knife handles, buttons, and various novelties, such as napkin rings. Whalebone is a light, flexible, strong substance obtained from the plates with which baleen whales are equipped instead of teeth. The plates vary in length from a few inches to 10 or 12 feet. Chemically it is composed of albumen hardened by phosphate of lime. From it are made

bristles for brushes and stuffing for mattresses; knobs for canes, umbrellas, and parasols; whips and artificial flowers; and formerly umbrella ribs and stiffening for corsets. It has been supplanted by steel in umbrellas, while gutta-percha, celluloid, and similar material are used in dressmaking.

PRODUCTION.

Official production data are lacking in most cases. The domestic whalebone catch is entered chiefly at Alaska and Washington. In 1914 the total reported was 58,000 pounds; in 1916 it was 36,624; and in 1918 it was 9,250, the last amount being entirely from Alaska.

EXPORTS.

Manufactures of straw and palm leaf are the only articles for which exports are shown in official sources. In 1920 these amounted to $1,602,941, and since 1913 have averaged $900,000. They are chiefly to Canada, Cuba, and South America. Whalebone is exported to some extent to England, Canada, and France.

IMPORTS.

Manufactures of quills imported consist largely of quill toothpicks Products of palm leaf, straw, and grass are the largest imports of this class, averaging since 1913 about $400,000, or less than half the average exports of the same item. Canada, China, and Japan are the chief sources. Imports of chip articles were small prior to 1914, but increased to $53,000 in 1919 and over $100,000 in 1917 and 1918. Imports of manufactured whalebone are nil, but the unmanufactured material is imported from Russia and Canada, and lately from the Falkland Islands.

TARIFF HISTORY.

Under the act of 1883 baskets and all other articles of grass, palm leaf, whalebone, * * * or straw were dutiable at 30 per cent ad valorem; the act of 1890 made manufactures of bone, chip, grass, horn * * * palm leaf, straw, weeds, or whalebone, n. s. p. f., dutiable at 30 per cent ad valorem; this was reduced to 25 per cent under the act of 1894 but again increased to 30 per cent by the act of 1897. The act of 1909 added manufactures of quills and increased the duty to 35 per cent. Under the present act manufactures of palm leaf are dutiable at 15 per cent; manufactures of bone, chip horn, quills, whalebone, at 20 per cent; and manufactures of grass, straw, and weeds, at 25 per cent.

MANUFACTURES OF INDIA RUBBER AND HARD RUBBER, N. S. P. F., AND DRUGGISTS' SUNDRIES.

SUMMARY.

In 1914 there were 342 rubber manufacturing establishments in the United States, capitalized at $267,671,422, employing 74,022 wage earners, and turning out rubber products valued at $300,994,000. This was eleven times greater than the value of similar products in 1879; by 1917, however, it had increased nearly 300 per cent.

Articles coming within the tariff classification "not specially provided for" constitute the larger portion of these manufactures. Chief among them are automobile tires. Other products are motorcycle and bicycle tires, rubber hose, rubber boots and shoes, rubber tubing, and druggists' sundries.

Rubber is vulcanized to make it elastic, impervious, and unchangeable in texture under ordinary conditions; qualities which it does not possess in its crude state, but which are necessary for commercial usage. Essentially the process, which was discovered by an American, Charles Goodyear, consists of mixing the cleaned and purified crude rubber with sulphur and subjecting the mixture to moderate heat (about 300° F.). Other chemicals or minerals are sometimes used in addition to sulphur for giving the rubber additional qualities of resiliency, toughness, etc.

The home consumption of manufactures of rubber is enormous, especially of automobile tires. This demand is met by the domestic production, which is sufficient also to permit of large exports. These amounted to more than $85,000,000 in 1920. England is the leading foreign producer, followed by France. England's production is about one-seventh that of this country. Imports are comparatively unimportant, amounting in 1919 to $1,373,469, about 1.60 per cent of our exports for that year.

Ohio, Massachusetts, and New Jersey, in the order named, are the most important producing centers. Ohio produces more than one-third of the total domestic output, its products being tires and general manufactures. Massachusetts leads in the production of rubber boots and shoes, and New Jersey in rubber hose, packing, and belting.

The corporate form of ownership predominates, and the tendency is to concentrate in large establishments with large-scale production. The capital of the 10 largest companies in 1919 was $394,553,000, as compared with $267,671,422, the total capitalization in 1914. In the early part of 1920 production was large, but fell off later in the year, due to decrease of orders and general depression. This depression is still felt (February, 1921), but orders are increasing and production is being resumed. At the present time it is reported that about one-third of the number employed a year ago in the Ohio district are working.

Tennis balls are admitted as manufactures of rubber under this paragraph. Manufacturers of these articles contend that they should be dutiable at a rate equivalent to the duty on wool, as the cover, which is of wool, is the more important part of the ball.

Summary table.

Year.	Domestic production.	Imports for consumption.	Domestic exports.	Ratio to production.		Value (imports for consumption.)	Amount of duty.	Equivalent ad valorem rate.
				Imports.	Exports.			
				Per cent.	*Per cent.*			*Per cent.*
1910	[1] 197,394,638	$1,034,899	$10,215,634			$1,034,899	$372,856	36.02
1911		926,822	12,452,562			926,822	324,980	35.06
1912		911,182	12,732,918			911,182	319,496	35.06
1913		1,210,448	14,324,894			1,210,448	424,038	35.03
1914	300,994,000	1,489,680	12,441,220	0.49	4.13	1,489,680	266,803	17.91
1915		791,720	14,767,513			791,720	111,491	14.08
1916		533,773	35,153,374			533,773	57,682	10.80
1917	[2] 896,000,000	786,932	31,105,075			786,932	82,731	10.51
1918		413,987	33,343,181			413,987	47,640	11.51
1918 [3]		318,101	31,501,292			318,101	33,814	10.62
1919 [3]		948,961	53,864,881			948,961	97,813	10.30
1920 [3]		1,373,469	85,436,897			1,373,469	161,116	11.73

[1] Census of 1909.
[2] War Industries Board Price Bulletin No. 30.
[3] Calendar year.

General Information.

DESCRIPTION AND USES.

Manufactures of india rubber, not specially provided for, constitute the largest portion of products of the rubber industry. Various articles of rubber manufacture are covered in the different schedules of the tariff, either specifically or as articles of specified groups (rubber toys; rubber tobacco pouches, dutiable as smokers' articles). The value of these is large, but not so great as the unspecified manufactures, among which are automobile and other tires and tire sundries; rubber boots and shoes; rubber tubing; dentists' rubber supplies; rubber balls, pouches, bulbs, and sponges; partially manufactured rubber; rubber sheets and cakes; rubber hospital sheeting and printing blankets; and many other articles. It is said that one of the larger rubber concerns manufactures 30,000 different articles.

Druggists' rubber sundries comprise such products as hot-water bottles, ice bags, and similar articles; vulcanized rubber, known as hard rubber (par. 369), differs from soft or pliable rubber in having a larger sulphur content and in being vulcanized at higher temperatures. It is used in bowling balls, knife and razor handles, combs, fountain-pen barrels, and other articles of use and adornment.

DOMESTIC PRODUCTION.

Materials and processes.—To render the crude rubber commercially adaptable, it is put through a vulcanizing process to make it elastic, impervious, and unchangeable in texture. This process consists commonly of mixing sulphur with the rubber and subjecting it to moderate heat (about 300° F.) for six or more hours. Sulphur is the most universally used ingredient, being always used to some extent in vulcanization, but other chemicals and minerals are also employed for adding resiliency, weight, toughness, and other qualities, as they

may be required for the finished articles. Among these are zinc oxide, lithophone, magnesia, whiting, and barytes. Cotton, silk, and wool are also used in the making of rubber fabric or cloth.

The crude rubber is first thoroughly cleansed. It is allowed to remain in steam heated water for 24 hours, when it is cut up and the larger impurities removed by hand. It is then washed by passing between two heavy corrugated iron rollers. A stream of water flows over the rubber from a pipe directly at the point of contact with the rollers, and the combined action of the rollers and water removes all foreign substances adhering to the rubber. It is next placed in a drying chamber and, after thoroughly drying, is stored in darkness until needed. Methods of vulcanizing vary with the article being made, but generally the purified and masticated gum is thoroughly kneaded with the requisite amount of sulphur and cut and shaped before heat is applied.

History and development.—The United States has always led the world in the manufacture of rubber goods. The industry had its inception here, the vulcanization process having been discovered by Charles Goodyear, an American. Our output is approximately seven times as large as the next manufacturing nation. In 1906 we consumed 24,113 tons of crude rubber as against 13,868 tons consumed by Great Britain, the next largest consumer; in 1917 our consumption had reached 157,371 tons as compared with 25,983 tons consumed by Great Britain; an increase of about 600 per cent to 100 per cent.[1]

In 1879 the value of domestic products was $25,309,648. This had increased more than elevenfold by 1914. For the decade 1904 to 1914 the increase was 103.4 per cent, while for the latter half of the decade it was 52.5 per cent. Between 1914 and 1917 the increase was nearly 300 per cent.

Organization.—The Census of Manufacturers for 1914 classifies data on rubber products into three groups—rubber belting and hose, rubber boots and shoes, and rubber products not elsewhere specified. The last group is not entirely synonymous with the tariff classification, "manufactures of rubber not specially provided for," although articles coming under such classification form the chief value of the group. Rubber boots and shoes are within the classification. Rubber belting is not, however, nor is hose except that which is made entirely of rubber and not partly of cotton, flax, hemp, ramie, or jute. The greater part of the value of hose shown in the second group probably comprises hydraulic or flume hose, dutiable at 7 cents per pound under paragraph 274. Rubber fabrics and rubber clothes are among the items included in the third group, which do not come within the tariff classification. Elastic woven goods are not included in the data as manufactures of rubber.

In 1914 the industry showed 342 establishments, with 88,821 employees and officials. Of these, 74,022 were wage earners, 13,200 clerks and subordinate salaried employees, and 1,559 proprietors, officials, and salaried officers. Eighteen establishments, with 5,115 wage earners, were engaged in manufacturing belting and hose; 23, with 18,687 wage earners, in manufacturing boots and shoes; and 301, with 50,220 wage earners, devoted to other manufactures of rubber.

[1] War Industries Board Price Bulletin No. 30.

Tennis balls are
paragraph. Manuf
be dutiable at a r
which is of wool, is

Year.	Domestic production.
1910	[1] 197,394,63
1911	
1912	
1913	
1914	300,994,0
1915	
1916	
1917	[2] 896,000,(
1918	
1918 [3]	
1919 [3]	
1920 [3]	

[1] Census of 1909.
[2] War Industries B
[3] Calendar year.

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The total capitalization was $[illegible] wages, $44,167,402.

The corporate form of ownership prevails [illegible] lishments being of this type, producing [illegible] The tendency of the business is to concentrate in [illegible] with large-scale operation. A few establishments small amount of business, but their number is [illegible] per cent of the output in 1914 was by establishments business of more than $1,000,000. The establishments more than 500 wage earners constitute only [illegible] number, but give employment to [illegible] per cent of

Later complete figures are not available. The largest companies in 1919 aggregated $[illegible] cent greater than the capital of the entire industry

Tires are the chief product, [illegible] total output.

Geographical distribution.—The industry is centered many States, Ohio, Massachusetts and New Jersey named, being far ahead of the others. Ohio and [illegible] general manufactures) exceed the combined values of Massachusetts. This leadership is due to the development of the great tire and general rubber manufacturing production of the city being by far the largest. Massetts leads in the production of rubber boots and Jersey in the production of rubber belting and packing. two States are also large producers of general manufactures.

Production.—The domestic output in 1914 was $300,994,000. In 1917 this had increased to $896,000,000. the first six months of 1920 the value was reported to be Tires and tire sundries, the largest item, were valued at in 1914 and $394,340,825 for the first half of 1920. The the entire year is not known, but it is [illegible] with the value of products for the first half of the year tion of orders and curtailment of production in the latter year. This depression still exists [illegible] although look is brighter and orders are increasing. In the Akron output now is approximately one-fifth of what it was and it is reported that less than one-third of the number then are now working.

The following table gives the value of the different products

[1] India Rubber World, Feb. 1 [illegible]
[2] War Industries Board Bulletin No. [illegible]
[3] India Rubber Review, Feb. 15, 1921. Figures made up by [illegible]

Rubber manufactures, 1914.

[Abstract Census of Manufactures, 1914.]

Product.	Quantity and value.	Product.	Quantity and value.
al value	$300,993,796	Tires—Continued.	
		Motor cycle and bicycle (including airplane tires)—	
	4,024,486	Number	3,728,138
	$12,647,934	Value	$6,905,853
		Belting, value	$7,989,405
	57,211,728	Hose, value	$16,853,693
	$37,858,222	Packing, value	$3,507,651
		Clothing, value	$6,799,515
omobile—		Druggists' and stationers' sundries, value	$7,511,755
Casings—		All other manufactures of rubber, value	$40,133,250
Number	8,021,371	Scrap and old rubber (sold or on hand), value	$1,250,836
Value	$105,678,951	Reclaimed rubber (sold or on hand), value	$11,134,958
Inner tubes—		All other products, value	$8,885,008
Number	7,907,351		
Value	$20,101,084		
Solid, all kinds, value	$13,735,681		

dition, products to the value of $752,503 were reported by establishments assigned to other classifi-

EXPORTS.

lome consumption of rubber manufactures is enormous, the fact t 85 to 90 per cent of the world's automobiles are owned here icating the extent of the demand for rubber tires. The domestic put, however, is sufficient to meet this demand and permit of large orts to practically all parts of the world.

All articles are exported to some extent, but tires form the chief m. In 1914 the value of exports was $12,441,220 and in 1920 5,436,897, of which $53,074,015 was tires.

FOREIGN PRODUCTION.

Statistics on foreign production are not available, but the consumption of crude rubber furnishes a basis for comparison. Great Britain's consumption in 1917 was about one-seventh that of the United States; rance about one-tenth; Italy about one-twenty-fifth. Great Britin's exports [5] in 1914 were $11,315,608 and in 1918 $17,139,902.

IMPORTS.

Imports are not serious from a competitive standpoint, amounting to $1,489,680 in 1914, and in 1920 to $1,373,469, or 1.60 per cent of exports. Tires amounted to $194,445, or 0.36 per cent of our exports of tires. Imports in 1917 were less than one-tenth of 1 per cent of domestic production. They are chiefly from Canada and England.

PRICES.

The prices shown on page 32 of this report are taken from the War Industries Board Price Bulletin No. 30. Restrictions on output were placed on rubber manufactures during the latter part of 1918, and, commenting on this, the War Industries Board states:

> These regulations were not in effect sufficiently long enough to have any marked influence upon the price situation in the rubber industry. After the signing of the armistice they were gradually revoked.

[5] Great Britain Annual Return of Trade with Foreign Countries. Pounds sterling converted to dollars at normal exchange, $4.8665.

The total capitalization was $267,671,422; salaries, $16,278,578; and wages, $44,167,402.

The corporate form of ownership prevails, 82 per cent of the establishments being of this type, producing 99 per cent of the total output. The tendency of the business is to concentrate in large establishments with large-scale operation. A few establishments are reported doing small amount of business, but their number is decreasing yearly; 83 per cent of the output in 1914 was by establishments with an annual business of more than $1,000,000. The establishments employing more than 500 wage earners constitute only 11.7 per cent of the total number, but give employment to 70.2 per cent of the wage earners.

Later complete figures are not available. The capital of the 10 largest companies in 1919 aggregated $394,553,000, about 47 per cent greater than the capital of the entire industry in 1914.[2]

Tires are the chief product, in 1914 averaging 48.6 per cent of the total output.

Geographical distribution.—The industry is carried on in a great many States, Ohio, Massachusetts, and New Jersey, in the order named, being far ahead of the others. Ohio's products (tires and general manufactures) exceed the combined totals of New Jersey and Massachusetts. This leadership is due to the development in Akron of the great tire and general rubber manufacturing companies, the production of the city being 84 per cent of Ohio's total. Massachusetts leads in the production of rubber boots and shoes, and New Jersey in the production of rubber hose, packing, and belting. These two States are also large producers of general manufactures.

Production.—The domestic output in 1914 was valued at $300,994,000. In 1917 this had increased to $896,000,000,[3] and for the first six months of 1920 the value was reported to be $577,388,210.[4] Tires and tire sundries, the largest item, were valued at $146,521,569 in 1914 and $394,340,828 for the first half of 1920. The output for the entire year is not known, but it is not thought to be commensurate with the value of products for the first half of the year, due to reduction of orders and curtailment of production in the latter part of the year. This depression still exists (February, 1921), although the outlook is brighter and orders are increasing. In the Akron district the output now is approximately one-fifth of what it was a year ago, and it is reported that less than one-third of the number employed then are now working.

The following table gives the value of the different products in 1914:

[2] India Rubber World, Feb. 1, 1921.
[3] War Industries Board Bulletin No. 30, p. 5.
[4] India Rubber Review, Feb. 15, 1921; Survey made by Rubber Association of America.

portant and expensive
a lower duty than the

nited States.

Total value	
Boots:	
Pairs	$77,197,830
Value	148,014,909
Shoes:	197,394,638
Pairs	300,994,000
Value	
Tires:	
Automobile—	
Casings—	
Number	[illegible]
Value	$896,000,000
Inner tubes—	577,388,210
Number	
Value	
Solid, all kinds	

ber Review, Feb. 15, 1921.]

In addition, products [illegible] cations.

1909	1914
$13,722,000	$23,789,000
(1)	(1)
30,999,000	30,033,000
40,721,000	53,822,000

Home consumption of [illegible] that 85 to 90 per cent of the [illegible] indicating the extent of the [illegible] output, however, is sufficient to [illegible] exports to practically all parts of [illegible]

All articles are exported in [illegible] item. In 1914 the value of [illegible] $85,436,897, of which $53,07[illegible]

mpshire, Oregon, South

FOREIGN [illegible]

[illegible]	1914
[illegible]	$10,341,000
[illegible]	13,220,000
[illegible],000	23,561,000

Statistics on foreign production [illegible] tion of crude rubber furnishes a [illegible] consumption in 1917 was about [illegible] France about one-tenth; Italy about [illegible] ain's exports [5] in 1914 were $11,315,[illegible]

IMPORTS.

Imports are not serious from a [illegible] to $1,489,680 in 1914, and in 1920 to $[illegible] exports. Tires amounted to $194,445, [illegible] of tires. Imports in 1917 were less than [illegible] domestic production. They are chiefly [illegible]

[illegible]	1914
[illegible],000	$905,000
[illegible],000	19,188,000
[illegible],000	1,980,000
[illegible],000	6,333,000
[illegible],000	22,011,000
[illegible],000	726,000
[illegible],000	25,458,000
[illegible],000	10,228,000
[illegible],000	109,659,000
[illegible],000	12,177,000
[illegible],000	6,089,000
[illegible],000	7,382,000
[illegible],000	9,475,000
[illegible],000	228,811,000

PRICES.

The prices shown on page 32 of this [illegible] Industries Board Price Bulletin No. 30. [illegible] placed on rubber manufactures during the [illegible] commenting on this, the War Industries Board [illegible]

These regulations were not in effect sufficiently long [illegible] influence upon the price situation in the rubber industry [illegible] armistice they were gradually revoked.

[5] Great Britain Annual Return of Trade with Foreign Countries, [illegible]ns, Washington, at normal exchange, $4.8665.

With reference to the price fluctuations it is stated in the bulletin, page 34:

A review of the run of prices for the rubber industry, as a whole—that is, for crude rubber, ingredients, and rubber products combined—makes apparent the fact that with the exception of the 16 months ending January, 1915, the rubber industry price situation had little in common with commodities in general. Low prices characterized the industry by and large. During the six years dealt with in this study there were only 12 months in which the index number of the rubber industry was higher than that of "all commodities," and in all but four these instances variations above the general price level were less than 10 per cent. In February, 1915, rubber prices fell 16 per cent below the level of all commodities, and from that time on the index numbers of the rubber industry and of commodities in general followed individual courses. The latter, after remaining relatively static for some nine months, ascended rapidly, reaching its first apex in July, 1917, at a point of 89 per cent above the level of February, 1915. The governmental policy of price-fixing inaugurated in the summer of 1917 resulted in a slight recession, which continued until June of the following year, when the upward course of prices was resumed. The year 1918 ended with the index number of all commodities 103 per cent above its prewar level.

The index number of the rubber industry, on the other hand, followed a rather slow upward course, which was interrupted now and then by cycles of depression varying from 1 to 10 months in duration. At no time did it approach the index number of "all commodities," and throughout the period following February, 1915, the price level of the rubber industry was at least 16 per cent below the price level of commodities in general. This difference in levels was highest in July, 1917, when the "all-commodities" index number was 80 per cent above that of the rubber industry. Throughout 1917 and 1918, in fact, the divergency existing between the two levels was one of great significance and is to be found in the price fluctuations of but few industries. The signing of the armistice found the price level of the rubber industry 72 per cent below that of all commodities, or, in other words, 31 per cent above its own level of 1913–14.

TARIFF HISTORY.

Under the tariff of 1886 india rubber boots and shoes were dutiable at 25 per cent ad valorem; manufactures of gutta percha at 35 per cent ad valorem, and manufactures of india rubber not specially provided for, at 30 per cent ad valorem. Under the act of 1890 manufactures, not specially provided for, remained at 30 per cent; rubber boots and shoes were not specially enumerated, and vulcanized rubber, known as hard rubber, classed with gutta percha manufactures at 35 per cent ad valorem. The act of 1894 reduced the duty on manufactures of india rubber, not specially provided for, to 25 per cent and that on manufactures of gutta percha and hard rubber to 30 per cent; under the act of 1897 the duties were increased to 30 per cent and 35 per cent, respectively, and the act of 1909 increased the duty on manufactures not specially provided for to 35 per cent, leaving manufactures of gutta percha and hard rubber at 35 per cent. Under this act rubber sponges were made dutiable at 40 per cent ad valorem. The act of 1913 made manufactures of vulcanized or hard rubber dutiable at 25 per cent; manufactures of india rubber or gutta perchas, known as "druggists sundries," dutiable at 15 per cent, and manufactures of india rubber not otherwise provided for at 10 per cent ad valorem.

TARIFF CONSIDERATIONS.

A manufacturer of tennis balls states that tennis balls are admitted under this paragraph as a manufacture of rubber, and contends that this classification of the article, which is composed of india rubber with a wool covering, works a hardship on the domestic manufac-

turer, in that the wool cover is the most important and expensive part of the ball, and that it thus is admitted at a lower duty than the woolen cloth for making such covers.

Manufactures of rubber (total)—Production in United States.

OFFICIAL SOURCE.

[From Federal census.]

1899	$77 197,830
1904	148,014,909
1909	197,394,638
1914	300,994,000

OTHER SOURCES.

[1917, from War Industries Board Price Bulletin No. 30; 1920, India Rubber Review, Feb. 15, 1921.]

1917	$896,000,000
1920 (first six months)	577,388,210

Production in United States—States.

INDIA RUBBER BOOTS AND SHOES.

[From Federal census.]

State.	1904	1909	1914
Massachusetts	$39,034,549	$18,722,000	$23,789,000
Connecticut	12,829,346	(1)	(1)
All other	[2] 18,201,401	30,999,000	30,033,000
Total	70,065,296	49,721,000	53,822,000

[1] Included in "All other."
[2] Includes Connecticut, Kansas, Kentucky, Louisiana, Nebraska, New Hampshire, Oregon, South Carolina, Texas, Utah, Vermont, Virginia, Washington, West Virginia.

RUBBER BELTING AND HOSE.[1]

[From Federal census.]

State.	1904	1909	1914
New Jersey	$9,915,742	.....	$10,341,000
All other [2]	5,038,444	.....	13,220,000
Total	14,954,186	$19,238,000	23,561,000

[1] Includes hydraulic hose.
[2] California, Connecticut, Delaware, Massachusetts, New York.

RUBBER GOODS, NOT ELSEWHERE SPECIFIED.

[From Federal census.]

State.	1904	1909	1914
California	$219,212	$323,000	$905,000
Connecticut	8,868,353	11,005,000	10,188,000
Illinois	2,847,589	381,000	1,980,000
Indiana	2,357,111	4,313,000	6,333,000
Massachusetts	14,098,471	15,796,000	23,011,000
Missouri	(1)	(1)	726,000
New Jersey	4,836,338	19,543,000	25,458,000
New York	8,265,690	8,784,000	10,228,000
Ohio	15,963,603	53,911,000	109,659,000
Pennsylvania	2,220,355	4,686,000	12,177,000
Rhode Island	2,582,180	3,143,000	6,089,000
Wisconsin	720,036	(1)	7,382,000
All other	16,971	6,551,000	[2] 9,475,000
Total	62,995,909	128,436,000	223,611,000

[1] Included in "All other."
[2] Delaware, Iowa, Kentucky, Maryland, Michigan, New Hampshire, Oregon, Texas, Virginia, Washington.

Imports by countries.

MANUFACTURES OF INDIA RUBBER (FISCAL YEARS).

Imported from—	1913	1914	1915	1916	1917	1918 [1]
Austria-Hungary	$36,565	$46,064	$42,224	$9	.....	.....
Belgium	80,314	153,395	30,301	366	.....	.....
France	202,214	138,308	49,795	13,263	$4,849	$3,949
Germany	531,971	669,491	264,771	1,695	691	.....
Russia in Europe	35,270	149,826	23,375	10	.....	.....
England	306,853	299,612	272,711	227,589	373,804	284,128
Scotland	10,410	15,128	14,705	27,749	23,724	19,078
Canada	4,417	36,595	80,429	106,838	155,252	174,756
Japan	1,851	1,335	1,023	13,618	29,788	31,435
All other	7,371	8,035	11,947	6,893	20,816	86,417
Total	1,217,236	1,517,789	791,281	398,020	608,954	599,763

GUTTA-PERCHA, MANUFACTURES OF (FISCAL YEARS).

France	$973	$824	$511	.....	.....	.....
Germany	26,347	27,627	7,069	.....	$208	.....
United Kingdom	49,736	8,297	3,220	$56,697	171,599	$14,223
Canada	32	2,311	40	128	2,140	188
All other	212	2,964	1	1,050	2,028	2,567
Total	77,300	42,023	10,841	57,875	173,975	16,978

[1] Included in manufactures of india rubber and gutta-percha after 1918.

MANUFACTURES OF INDIA RUBBER AND GUTTA-PERCHA (CALENDAR YEARS).

Imported from—	1918	1919	1920
France	$4,285	$5,668	.....
Switzerland	2,564	.....	.....
England	216,425	480,642	.....
Scotland	26,936	30,542	.....
Canada	167,682	406,947	.....
Japan	21,441	30,550	.....
All other	5,999	1,636	.....
Total	445,332	956,085	$1,433,957

MANUFACTURES OF STRAW AND GRASS, N. S. P. F.

FISCAL YEARS.

Imported from—	1913	1914	1915	1916	1917	1918
Austria-Hungary	$2,304	$3,780	$1,731	.....	.....	.....
Belgium	12,196	15,101	2,499	$1,499	$848	.....
France	18,831	9,911	7,532	9,979	5,596	$5,239
Germany	9,274	18,016	6,841	206	.....	.....
Netherlands	59,982	55,399	42,537	40,331	19,344	12,976
Switzerland	3,184	4,203	7,938	28,975	10,074	14,007
United Kingdom	6,952	5,272	4,102	2,209	1,026	2,257
Canada	47,262	84,271	82,973	112,378	171,748	82,348
China	64,055	27,727	26,588	18,572	16,018	6,010
Hongkong	52,209	41,768	29,083	29,612	31,367	18,024
Japan	885,280	189,474	61,065	114,951	152,033	173,452
All other	12,788	6,849	12,931	10,445	17,595	28,022
Total	1,174,317	461,771	278,820	369,157	425,649	342,335

Imports by countries—Continued.

MANUFACTURES OF STRAW AND GRASS, N. S. P. F.—Continued.

CALENDAR YEARS.

Imported from—	1918	1919	1920
Austria-Hungary	.....	$675	.....
Belgium	.....	1,251	.....
France	$1,523	4,197	.....
Germany	.....	51	.....
Netherlands	.....	3,431	.....
Switzerland	4,044	32,916	.....
United Kingdom	282	201	.....
Canada	39,559	104,970	.....
China	1,677	6,380	.....
Hongkong	9,847	47,237	.....
Japan	131,841	140,834	.....
All other	15,585	20,758	.....
Total	204,358	362,701	$657,479

PALM LEAF, NATURAL (FISCAL YEARS).[1]

Imported from—	1913	1914	Imported from—	1913	1914
Austria-Hungary	$7,008	.....	Mexico	$1,332	.....
Belgium	.....	$30	Cuba	1,238	$1,500
Denmark	315	.....	China	3,844	8,909
Germany	1,532	.....	All other	35	2,863
Italy	317	.....	Total	17,214	14,044
England	5	.....			
Bermuda	588	742			

[1] Included in "All other articles" after 1914.

MANUFACTURES OF PALM LEAF, N. S. P. F. (FISCAL YEARS).

Imported from—	1913	1914
Germany	$5,349	$10,651
Mexico	238	713
Japan	22	773
All other	140	847
Total	5,749	12,984

CHIP—MANUFACTURES OF, N. S. P. F.[1]

France	$75	$22
Germany	4	92
England	3	.....
Japan	10	2,067
Total	92	2,181

[1] Included in "All other articles" after 1914.

QUILLS, MANUFACTURES OF (FISCAL YEARS).[1]

Imported from—	1913	1914	Imported from—	1913	1914
Austria-Hungary	$20,244	$8,807	Canada	$7	$21
Belgium	106	56	Hongkong	.....	3
France	8,218	9,261	Turkey in Asia	.....	20
Germany	356	1,254	Total	29,122	19,616
Switzerland	.....	79			
England	191	115			

[1] Included in "All other articles" after 1914.

Imports by countries—Continued.

WHALEBONE, UNMANUFACTURED (FISCAL YEARS).

Imported from—	1913		1914		1915	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
England					336	$538
Canada	156	$156	760	$1,000	1,138	1,067
Russia in Asia	8,830	12,510	8,488	10,450	38,590	66,627
All other	7	20	2	2	24	30
Total	8,993	12,686	9,250	11,452	40,088	68,262

Imported from—	1916		1917		1918	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
England	14,482	$7,246				
Canada			6,000	$4,000		
Russia in Asia	13,293	9,719	4,221	2,607	6,467	$3,234
All other	200	16			[1] 23,205	10,028
Total	27,975	16,981	10,221	6,607	29,672	13,262

[1] Falkland Islands, 22,400 pounds—$10,000.

Imports for consumption.

MANUFACTURES OF INDIA RUBBER AND GUTTA-PERCHA, KNOWN AS DRUGGISTS' SUNDRIES.

GENERAL TARIFF.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:						*Per cent.*
1914	15 per cent		$125,390	$18,808		15
1915	do		64,820	9,723		15
1916	do		24,295	3,644		15
1917	do		61,641	9,246		15
1918	do		106,580	15,987		15
Calendar year:						
1918	do		32,761	4,914		15
1919	do		64,579	9,687		15
1920	do		217,027	32,554		15
1921[1]	do		50,205	7,530		15

[1] 6 months ending June 30, 1921.

FROM CUBA (RECIPROCITY TREATY DEC. 27, 1903).

Fiscal year:						
1917	15 per cent less 20 cent.		$24	$2		12

MANUFACTURES OF VULCANIZED INDIA RUBBER, KNOWN AS HARD RUBBER.

Fiscal year:						
1908	35 per cent		$293,412	$102,694		35
1909	do		236,466	82,762		35
1910	do		265,202	92,820		35
1911	do		141,119	49,391		35
1912	do		141,239	49,436		35
1913	do		228,444	80,055		35
1914	do		91,277	22,406		35
1914	25 per cent		312,620	78,155		25
1915	do		160,207	40,570		25
1916	do		16,191	4,872		25
1917	do		6,350	1,590		25
1918	do		6,037	1,508		25

Imports for consumption—Continued.

MANUFACTURES OF VULCANIZED INDIA RUBBER, KNOWN AS HARD RUBBER—Continued.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Calendar year:						*Per cent.*
1918	25 per cent		$2,513	$628		
1919	do		4,624	1,156		
1920	do		88,058	22,014		25
1921[1]	do		60,487	15,121		25
From Cuba (Reciprocity Treaty Dec. 27, 1903).						
Fiscal year:						
1908	35 per cent less 20 per cent.		5	1		28
1909	do		3			
MANUFACTURES OF GUTTA-PERCHA, N. S. P. F.						
Fiscal year:						
1908	35 per cent		$41,299	$14,454		35
1909	do		67,971	23,789		35
1910	do		43,674	15,285		35
1911	do		60,511	21,179		35
1912	do		35,888	12,560		35
1913	do		35,625	12,468		35
1914	do		3,157	1,104		35
1914	10 per cent		28,674	2,867		10
1915	do		12,021	1,202		10
1916	do		58,986	5,898		10
1917	do		166,697	16,669		10
1918	do		18,629	1,862		10
Calendar year:						
1918	do		48,214	4,821		10
1919	do		143,438	13,343		10
1920	do		199,265	19,926		10
1921[1]	do		11,884	1,188		10
MANUFACTURES OF INDIA RUBBER, N. S. P. F.						
Under General Tariff.						
Fiscal year:						
1908	30 per cent		$1,856,517	$556,955		30
1909	do		1,130,662	339,198		30
1910	do		170,920	51,276		30
1910	35 per cent		722,820	252,987		35
1911	do		713,237	249,633		35
1912	do		722,380	252,833		35
1913	do		911,611	319,064		35
1914	do		191,878	67,157		35
1914	10 per cent		755,525	75,552		10
1915	do		534,389	53,438		10
1916	do		426,898	42,689		10
1917	do		552,184	55,218		10
1918	do		282,572	28,257		10
Calendar year:[2]						
1918	do		180,418	18,042		10
1919	do		368,169	36,817		10
1920	do		674,277	67,427		10
1921[1]	do		254,508	25,450		10
From Philippines.						
Fiscal year 1915	Free		$500			

[1] 6 months ending June 30, 1921.
[2] Figures for calendar years do not include automobile tires.

Imports for consumption—Continued.

MANUFACTURES OF INDIA RUBBER, N. S. P. F.—Continued.

FROM CUBA (RECIPROCITY TREATY DEC. 27, 1903).

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:						*Per cent.*
1908	30 per cent, less 20 per cent.		$67	$16		24
1909	do		1,386	332		24
1910	35 per cent, less 20 per cent.		140	39		28
1911	do		31	8		28
1914	10 per cent, less 20 per cent.		10			
1916	do		492	39		8
DUTY REMITTED.						
Fiscal year:						
1913	For use of United States.		$140			
1914	do		22			
1914	Secs. 4 and 5, act of Oct. 3, 1913.		5,081			
1915	For use of United States.		12			
AUTOMOBILE TIRES.[1]						
UNDER GENERAL TARIFF.						
Calendar year:						
1918 [2]	10 per cent	1,476	$54,094	$5,409	$36.64	10
1919	do	13,221	367,976	36,797	27.83	10
1920	20 per cent	8,702	178,920	17,892	20.56	10
1921 [3]		961	24,739	4,946		10
FROM VIRGIN ISLANDS.						
Calendar year 1918[1]	Free	6	$30			
FROM CUBA (RECIPROCITY TREATY).						
Calendar year:						
1919	10 per cent–20 per cent.	5	$170	$13		8
1920	do	1,725	15,525	1,242	$9.00	8
SPONGES MADE OF RUBBER.						
Fiscal year:						
1910	40 per cent		$13,063	$5,225		40
1911	do		11,924	4,769		40
1912	do		11,668	4,667		40
1913	do		8,628	3,451		40
1914	do		817	326		40
1914	15 per cent		2,242	336		15
1915	do		3,681	552		15
1916	do		3,601	540		15
1918	do		174	26		15
Calendar year:						
1919	do		5			
1920	do		397	59		15
1921 [3]	do		542	1		15

[1] Not separately stated prior to 1918.
[2] July 1 to Dec. 31, 1918.
[3] 6 months ended June 30, 1921.

Imports for consumption—Continued.

SPONGES MADE OF RUBBER—Continued.

FROM PHILIPPINES.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
Calendar year 1918.	Free		$71			

DRINKING STRAWS.

Fiscal years:						
1914	20 per cent		$1,787	$357		20
	15 per cent		2,809	421		15
1915	do		3,585	537		15
1916	do		4,797	719		15
1917	do		4,044	606		15
1918	do		3,269	490		15
Calendar years:						
1918	do		2,726	409		15
1920	do		2,084	316		15
1921[1]	do		4,287	643		15

MANUFACTURE OF STRAW AND GRASS, N. S. P. F.

UNDER GENERAL TARIFF.

Fiscal years:						
1908	30 per cent		$670,785	$201,235		30
1909	do		582,540	174,762		30
1910	do		76,675	23,002		30
	35 per cent		563,171	197,110		35
1911	do		786,347	275,221		35
1912	do		856,782	299,873		35
1913	do		1,102,813	385,984		35
1914	do		138,933	48,626		35
	25 per cent		287,503	71,875		25
1915	do		280,056	70,014		25
1916	do		364,038	91,009		25
1917	do		435,581	108,895		25
1918	do		304,032	76,008		25
Calendar years:						
1918	do		207,315	51,828		25
1919	do		353,211	88,303		25
1920	do		644,067	161,016		25
1921[1]	do		195,678	48,919		25

FROM PHILIPPINE ISLANDS (ACTS OF MAR. 3, 1905, AND OCT. 3, 1913).

Fiscal year:						
1908	75 per cent of 30 per cent.		$38	$8		22.50
1909	do		103	23		22.50
1910	do		47	10		22.50
1910	Free		400			
1911	do		1,812			
1912	do		14,834			
1913	do		95			
1914	do		1,553			
1915	do		1,450			
1916	do		274			
1917	do		1,293			
1918	do		1,361			
Calendar year:						
1918	do		845			
1919	do		741			
1920	do		6,328			

[1] 6 months ended June 30, 1921.

Imports for consumption—Continued.

MANUFACTURE OF STRAW AND GRASS, N. S. P. F.—Continued.

FROM CUBA (RECIPROCITY TREATY DEC. 27, 1903).

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:						*Per cent.*
1908	30 per cent less 20 per cent.		$6	$1		24
1909	do		3	1		24
1910	35 per cent less 20 per cent.		18	5		28
1911	do		6	1		28
1912	do		6	1		28
1913	do		21	5		28
1916	25 per cent less 20 per cent.		79	15		20

PALM LEAF (NATURAL).

Fiscal year:						
1908	Free		$29,641			
1909	do		17,273			
1910	do		28,538			
1911	do		25,040			
1912	do		32,503			
1913	do		17,276			
1914	do		14,801			
1915	do		18,406			
1916	do		28,192			
1917	do		15,699			
1918	do		7,419			
Calendar year:						
1918	do		4,621			
1919	do		27,125			
1920	do		22,202			

PALM LEAF—MANUFACTURES OF (EXCEPT FANS).

UNDER GENERAL TARIFF.

Fiscal year:						
1908	30 per cent		$7,737	$2,321		30
1909	do		3,472	1,041		30
1910	do		275	82		30
1910	35 per cent		4,043	1,415		35
1911	do		6,081	2,128		35
1912	do		2,199	769		35
1913	do		5,712	1,999		35
1914	do		229	80		35
1914	15 per cent		12,843	1,926		15
1915	do		7,758	1,163		15
1916	do		18,213	2,731		15
1917	do		18,945	2,841		15
1918	do		8,413	1,261		15
Calendar year:						
1918	do		1,977	297		15
1919	do		4,773	716		15
1920	do		18,177	2,726		15
1921[1]	do		4,278	641		15

FROM CUBA (REC. TREATY, DEC. 27, 1903).

Fiscal year:						
1910	35 per cent less 20 per cent.		$15	$4		28
Calendar year:						
1918	15 per cent less 20 per cent.		15	1		12
1919	do		1			
1920	do		10	1		12

[1] 6 months ended June 30, 1921.

Imports for consumption—Continued.

PALM LEAF—MANUFACTURES OF (EXCEPT FANS)—Continued.

FROM PHILIPPINE ISLANDS (ACTS OF MAR. 3, 1905, AND AUG. 5, 1909).

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:						*Per cent.*
1908	75 per cent of 30 per cent.			$15	$4	28
1912	Free			15	1	12
1919	do			364		

MANUFACTURES OF CHIP, N. S. P. F.

UNDER GENERAL TARIFF.

Fiscal year:						
1908	30 per cent		$24,956	$7,486		30.00
1909	do		22,028	6,608		30.00
1910	do		4,925	1,477		30.00
1910	35 per cent		11,304	3,956		35.00
1911	do		5,661	1,981		35.00
1912	do		851	297		35.00
1913	do		492	172		35.00
1914	do		1,155	404		35.00
1914	20 per cent		2,931	586		20.00
1915	do		15,433	3,086		20.00
1916	do		48,578	9,715		20.00
1917	do		132,554	26,510		20.00
1918	do		102,371	20,474		20.00
Calendar year:						
1918	do		41,579	8,316		20.00
1919	do	212,143	53,000	10,600	$0.249	20.00
1920	do		140,607	28,121		20.00
1921 [1]	do		54,172	10,834		20.00

FROM PHILIPPINES.

Fiscal year:						
1910	75 per cent of 30 per cent.		$2			
1911	Free		2			

QUILLS—MANUFACTURES OF (TOOTHPICKS).

Fiscal year:		*Thousands.*				
1908	2 cents per 1,000 and 15 per cent.	55,429	$20,981	$4,255	$0.379	20.28
1909	do	33,902	19,097	3,542	.563	18.55
1910	do	2,252	1,297	236	.573	18.20
1910	35 per cent	14,298	9,100	3,185	.636	35.00
1911	do	25,463	11,984	4,194	.471	35.00
1912	do	12,009	8,166	2,858	.680	35.00
1913	do	41,020	18,646	6,526	.455	35.00
1914	do	1,752	1,535	537	.876	35.00
1914	20 per cent		8,506	1,701		20.00
1915	do		8,519	1,703		20.00
1916	do		21,543	4,308		20.00
1917	do		26,256	5,251		20.00
1918	do		10,532	2,106		20.00
Calendar year:						
1918	do		12,848	2,570		20.00
1919	do	24,502	11,191	2,238	.4567	20.00
1920	do	22,713	17,614	3,522	.775	20.00
1921 [1]	do	6,802	7,622	1,524		20.00

[1] Six months ended June 30, 1921.

Imports for consumption—Continued.

QUILLS, OTHER MANUFACTURES OF.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:						*Per cent.*
1908	20 per cent		$494	$98		20
1909	do		639	127		20
1910	do		56	11		20
1910	35 per cent		5,328	1,864		35
1911	do		13,170	4,609		35
1912	do		11,135	3,897		35
1913	do		5,959	2,085		35
1914	do		3,381	1,183		35
1914	20 per cent		8,260	1,652		20
1915	do		9,342	1,868		20
1916	do		1,347	269		20
1917	do		1,548	309		20
1918	do		2,179	435		20
Calendar year:						
1918	do		2,055	411		20
1919	do		8,320	1,664		20
1920	do		15,575	3,115		20
1921 [1]	do		2,242	448		20

WEEDS, MANUFACTURES OF.

Fiscal year:						
1917	25 per cent		$131	$32		25
Calendar year:						
1920	do		398	99		25
1921 [1]	do		226	56		25

WHALEBONE, UNMANUFACTURED.

		Pounds.				
Fiscal year:						
1908	Free	9,154	$43,642		$4.77	
1909	do	14,295	64,653		4.52	
1910	do	10,000	26,472		2.65	
1911	do	31,024	91,435		2.95	
1912	do	18,251	44,587		2.44	
1913	do	9,992	12,686		1.27	
1914	do	9,524	11,781		1.24	
1915	do	40,088	68,262		1.70	
1916	do	27,855	17,936		.64	
1917	do	10,221	6,607		.64	
1918	do	36,107	16,480		.45	
Calendar year:						
1918	do	42,289	25,901		.612	
1919	do	9,371	6,659		.710	
1920	do	2,779	1,251		.450	
1921 [1]	do	226	122			

WHALEBONE, MANUFACTURES OF.

Fiscal year:						
1908	30 per cent		$93	$27		30
1909	do		27	8		30
1910	35 per cent		51	17		35
1911	do		126	44		35
1912	do		136	47		35
1913	do		34	11		35
1914	20 per cent		713	142		20
1915	do		173	34		20
1916	do		479	95		20
1917	do		886	177		20
1918	do		32	6		20
Calendar year:						
1918	do		2			
1919	do		72	14		20
1920	do		330	66		
1921 [1]	do		272	58		20

[1] Six months ended June 30, 1921.

Domestic exports.

INDIA RUBBER MANUFACTURES.

BELTING, HOSE,[1] AND PACKING.

FISCAL YEARS.

Exported to—	1913	1914	1915	1916	1917	1918
France	$32,116	$62,349	$6,900	$35,746	$51,568	$31,905
Germany	56,673	65,283	2,495	.....	.....	.....
England	239,753	334,295	271,708	814,900	523,875	144,724
Scotland	18,010	11,774	7,554	37,757	100,221	.....
Canada	472,645	306,707	247,114	279,342	468,126	511,381
Panama	182,671	140,805	37,982	116,083	87,109	79,545
Mexico	438,885	269,483	168,336	193,470	265,680	459,325
Cuba	156,069	127,817	109,425	171,456	252,110	386,069
Argentina	40,011	37,824	28,215	74,666	131,918	163,077
Brazil	41,177	25,084	23,719	67,339	144,554	197,360
Chile	57,970	71,113	107,006	175,879	274,164	389,694
Japan	77,900	106,551	38,520	99,734	158,358	346,516
Australia	186,663	182,927	132,202	140,715	131,716	437,356
Philippine Islands	79,637	50,444	58,606	57,686	63,697	213,517
British South Africa	171,998	223,476	300,430	376,885	361,432	472,235
Portuguese Africa	58,605	40,698	40,069	27,939	29,115	64,225
Total	2,605,551	2,372,887	1,807,848	2,986,953	3,532,384	4,525,243

[1] Includes hydraulic or flume hose.

CALENDAR YEARS.

Exported to—	1918	1919	1920
France	$31,905	.....	.....
England	144,724	.....	.....
Canada	511,381	.....	.....
Panama	79,545	.....	.....
Mexico	459,325	.....	.....
Cuba	386,069	.....	.....
Argentina	163,077	.....	.....
Brazil	197,360	.....	.....
Chile	389,694	.....	.....
Japan	346,516	.....	.....
Australia	437,356	.....	.....
Philippine Islands	213,517	.....	.....
British South Africa	472,235	.....	.....
Portuguese Africa	64,225	.....	.....
Total	4,525,243	$6,100,460	$8,398,401

SCRAP AND OLD.

FISCAL YEARS.

Exported to—	1913		1914		1915	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Austria-Hungary	92,708	$17,236	77,073	$15,374	2,616	$441
France	1,131,191	161,070	888,386	95,567	138,714	18,902
Germany	959,509	146,476	514,720	98,485	38,775	9,163
Italy	29,382	2,546	78,267	5,696	38,874	3,797
Netherlands	363,834	49,204	249,163	35,108	13,426	2,033
England	2,679,669	259,153	3,126,182	206,623	1,025,793	136,704
Scotland	131,213	15,843	22,165	3,219	450,645	51,129
Canada	1,341,637	154,134	1,032,429	105,883	603,564	53,805
Japan	34,794	3,613	40,491	1,534	30,143	1,349
All other	505,528	71,167	178,796	30,798	89,541	14,098
Total	7,269,465	880,442	6,207,672	598,287	2,422,091	291,421

Domestic exports—Continued.

INDIA RUBBER MANUFACTURES—Continued.

SCRAP AND OLD—Continued.

FISCAL YEARS—continued.

Exported to—	1916		1917		1918	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
France	83,119	$12,494	117,984	$20,074	141,990	$39,191
Italy			65	10		
England	1,362,622	181,522	890,194	148,488	3,143	820
Scotland	835,524	105,914	942,785	116,441	19,183	1,918
Canada	1,393,550	69,502	1,496,320	112,418	1,951,976	193,827
Japan	121,068	14,981	223,173	17,127		
All other	308,832	15,735	26,140	918	955	55
Total	3,904,715	400,148	3,696,661	415,526	2,117,257	235,811

CALENDAR YEARS.

Exported to—	1918		1919		1920	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
France	8,041	$4,452	603,099	$100,015		
Germany			201,000	29,204		
Italy			22,400	3,136		
Netherlands			1,283,640	127,062		
England			1,488,874	189,422		
Scotland			447,981	42,988		
Canada	2,923,570	283,392	2,316,488	178,578		
Japan			1,453,462	66,356		
All other	318	39	475,109	50,232		
Total	2,931,929	287,883	8,292,053	808,903	10,468,538	$788,097

RECLAIMED.

FISCAL YEARS.

Exported to—	1913		1914		1915	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Belgium	109,232	$17,400	69,344	$12,442	6,685	$1,300
France	234,604	29,525	378,503	45,737	295,619	37,822
Germany	129,530	27,599	282,860	51,972	10,608	1,436
England	697,775	119,641	723,080	128,233	886,072	134,200
Scotland	46,676	8,003	70,839	11,701	90,807	13,550
Canada	3,808,611	661,960	3,880,556	555,121	4,511,317	610,467
Japan	240,512	39,331	72,427	12,440	116,657	16,731
All other	146,307	29,445	106,251	16,794	52,615	6,995
Total	5,413,247	932,904	5,583,860	834,440	5,970,380	822,561

Exported to—	1916		1917		1918	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
France	343,466	$42,965	155,548	$23,735	227,806	$31,631
England	852,091	127,757	483,620	94,292	40,134	10,496
Scotland	126,065	19,788	40,611	6,700		
Canada	4,921,584	659,589	4,140,129	669,202	2,713,656	455,147
Japan	84,719	10,659	39,244	7,332	20,250	3,211
All other	79,021	10,504	59,839	12,938	283,112	66,793
Total	6,406,946	871,262	4,938,991	814,199	3,284,958	567,278

Domestic exports—Continued.

INDIA RUBBER MANUFACTURES—Continued.

RECLAIMED—Continued.

CALENDAR YEARS.

Exported to—	1918		1919		1920	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Belgium			13,468	$2,400		
France	137,519	$20,061	180,570	26,574		
England			321,504	53,906		
Scotland			448,000	73,297		
Canada	2,591,012	441,492	3,750,138	619,524		
Japan	35	10	46,574	7,397		
All other	175,668	40,613	310,378	56,840		
Total	2,904,234	502,176	5,070,632	839,938	4,924,668	$832,873

BOOTS.

FISCAL YEARS.

Exported to—	1913		1914		1915	
	Pairs.	Value.	Pairs.	Value.	Pairs.	Value.
Denmark	959	$1,426	444	$1,090		
France	36	118	296	1,063	24,187	$40,204
England	31,081	64,329	18,824	44,560	231,688	518,643
Canada	13,009	44,725	28,949	92,781	22,928	66,237
Newfoundland and Labrador	5,231	13,296	8,441	20,849	14,375	33,265
Brazil	1,229	4,236	1,298	2,771	133	335
Chile	2,001	8,720	930	4,643	1,276	4,172
Australia	4,647	12,996	10,219	26,543	6,694	15,952
New Zealand	22,873	47,218	10,492	33,643	9,217	27,298
British South Africa	3,124	11,457	3,131	8,529	2,925	6,993
All other	45,538	65,819	18,337	42,714	5,304	13,666
Total	109,528	274,330	101,361	279,206	318,727	726,765

Exported to—	1916		1917		1918	
	Pairs.	Value.	Pairs.	Value.	Pairs.	Value.
Denmark			267	$1,027	1	$4
France	60,418	$132,203	108,922	381,826	1,254,623	3,913,450
England	569,907	1,248,116	343,487	694,473	131,960	455,946
Canada	32,842	91,601	68,701	186,331	84,093	254,837
Newfoundland and Labrador	23,436	54,716	42,590	103,684	53,409	141,364
Brazil	366	1,242	254	892	599	2,035
Chile	4,077	9,410	1,727	6,951	602	2,347
Australia	7,071	19,884	5,482	16,207	819	2,489
New Zealand	9,609	29,048	5,165	17,316	7,692	22,378
British South Africa	2,153	6,275	3,527	11,777	1,677	5,753
All other	10,251	26,766	20,333	62,895	24,123	60,612
Total	720,130	1,619,260	600,455	1,483,379	1,559,598	4,861,213

Domestic exports—Continued.

INDIA RUBBER MANUFACTURES—Continued.

Boots—Continued.

CALENDAR YEARS.

Exported to—	1918		1919		1920	
	Pairs.	Value.	Pairs.	Value.	Pairs.	Value.
Denmark	1	$4	10,076	$23,322	.....	.....
France	577,715	2,120,031	124	310	.....	.....
England	56,243	232,983	27,239	48,391	.....	.....
Canada	57,613	189,566	56,177	182,757	.....	.....
Newfoundland and Labrador	40,189	125,243	70,827	203,470	.....	.....
Brazil	148	901	494	2,475	.....	.....
Chile	1,628	7,739	3,002	12,480	.....	.....
Australia	3,008	8,567	1,773	5,478	.....	.....
New Zealand	5,830	17,383	14,734	41,609	.....	.....
British South Africa	3,232	12,117	3,969	12,385	.....	.....
All other	27,079	84,582	72,695	182,036	.....	.....
Total	772,586	2,799,116	261,110	714,713	302,852	1,012,099

SHOES.

FISCAL YEARS.

Exported to—	1913		1914		1915	
	Pairs.	Value.	Pairs.	Value.	Pairs.	Value.
Denmark	52,776	$25,617	36,023	$19,110	60,867	$29,432
France	54,252	27,436	43,181	22,579	761,402	1,254,228
England	695,466	325,646	539,626	238,011	662,039	360,310
Scotland	58,958	31,485	54,582	26,746	31,218	12,458
Canada	82,624	46,074	70,660	46,711	32,252	27,011
Newfoundland and Labrador	49,999	31,243	46,265	24,542	70,343	35,514
Brazil	76,031	43,861	32,803	19,925	8,096	4,677
Chile	20,434	12,677	9,957	5,676	4,387	3,144
Japan	46,717	27,977	24,132	12,086	20,623	11,032
Australia	340,938	163,150	346,410	183,634	199,694	108,060
New Zealand	26,618	21,122	14,177	9,331	27,955	15,514
All other	726,594	417,665	416,442	225,938	145,024	192,180
Total	2,231,407	1,163,953	1,634,258	834,289	2,219,900	2,053,560

Exported to—	1916		1917		1918	
	Pairs.	Value.	Pairs.	Value.	Pairs.	Value.
Denmark	6,801	$4,044	49,818	$22,886	3	$6
France	148,585	71,448	236,635	102,420	.....	.....
England	1,068,429	527,452	1,385,947	847,653	250,500	128,457
Scotland	57,565	20,473	111,545	40,168	9,671	8,894
Canada	34,729	26,458	92,739	72,871	166,601	168,390
Labrador and Newfoundland	86,681	60,415	116,875	81,508	105,565	83,368
Brazil	25,535	13,134	42,717	24,059	33,362	24,198
Chile	19,534	11,036	10,487	5,628	4,582	3,938
Japan	28,763	19,456	38,388	26,215	37,978	32,135
Australia	175,529	88,296	147,068	76,609	75,461	46,747
New Zealand	18,237	13,460	20,435	11,837	20,371	13,474
All other	306,508	190,330	603,830	404,371	540,076	403,512
Total	1,976,896	1,046,102	3,356,484	1,716,225	1,244,170	913,128

Domestic exports—Continued.

INDIA RUBBER MANUFACTURES—Continued.

SHOES—Continued.

CALENDAR YEARS.

Exported to—	1918		1919		1920	
	Pairs.	Value.	Pairs.	Value.	Pairs.	Value.
Denmark	1	$4	500,219	$346,849	.....	.....
France	55,076	105,570	75,281	52,339	.....	.....
England	20,050	24,140	1,046,264	640,056	.....	.....
Scotland	.....	.....	6,700	4,983	.....	.....
Canada	318,919	722,994	131,222	146,824	.....	.....
Newfoundland and Labrador	128,866	124,214	89,026	87,190	.....	.....
Brazil	20,607	15,339	92,834	77,343	.....	.....
Chile	13,521	11,729	25,605	21,389	.....	.....
Japan	67,330	65,082	393,679	390,663	.....	.....
Australia	80,453	54,996	151,673	99,477	.....	.....
New Zealand	7,118	4,687	15,272	17,549	.....	.....
All other	573,169	455,992	3,266,713	2,666,724	.....	.....
Total	1,285,110	1,584,747	5,794,488	4,551,386	10,088,511	$9,738,390

DRUGGISTS' SUNDRIES.[1]

Exported to—	1918 [2]	1918 [3]	1919 [3]	1920
France	$47,746	$36,582	$45,581	.....
Italy	20,897	21,905	8,579	.....
England	142,308	64,268	176,918	.....
Canada	206,490	235,394	275,713	.....
Mexico	66,157	53,225	103,519	.....
Cuba	99,749	88,561	86,060	.....
Argentina	36,509	35,425	65,146	.....
Brazil	37,967	27,656	46,490	.....
Chile	30,365	26,338	39,039	.....
British India	17,714	18,231	18,724	.....
Australia	48,794	31,875	54,071	.....
All other	129,649	133,079	350,666	.....
Total	884,245	772,539	1,270,506	$1,890,957

[1] Included in "All other" prior to 1918.
[2] Fiscal year.
[3] Calendar year.

AUTOMOBILE TIRES.

FISCAL YEARS.

Exported to—	1913	1914	1915	1916	1917	1918
Belgium	$401,900	$15,730	.....	.....	.....	.....
Germany	401,196	132,181	$6,090	.....	.....	.....
Italy	1,150	915	11,740	$333,437	$101,362	$55,913
England	1,125,718	1,503,440	2,655,099	9,175,248	2,569,901	618,071
Scotland	.....	336	245	116,858	66,753	.....
Canada	1,324,459	961,937	772,574	1,176,836	1,485,939	1,766,518
Mexico	203,883	111,948	106,083	236,811	257,413	777,984
Jamaica	30,004	55,361	36,887	40,354	109,048	109,097
Cuba	12,322	55,236	192,355	547,410	1,019,915	1,336,233
Argentina	8,153	21,920	34,096	488,329	1,301,344	1,649,840
Brazil	47,537	11,839	77,425	295,479	696,876	455,102
Chile	2,844	10,636	21,353	58,809	264,603	725,876
Uruguay	1,990	17,987	11,826	76,608	100,427	224,694
Venezuela	10,703	20,439	32,635	71,849	128,966	116,612
Dutch East Indies	860	2,677	7,688	201,287	415,742	347,912
Philippines	100,476	141,205	250,832	391,634	345,702	863,727
British South Africa	17,057	27,090	32,822	291,318	391,211	693,065
All other	252,968	414,390	713,520	4,433,958	3,084,999	4,237,027
Total	3,943,220	3,505,267	4,963,270	17,936,227	12,330,201	13,977,671

Domestic exports—Continued.

INDIA RUBBER MANUFACTURES—Continued.

AUTOMOBILE TIRES—Continued.

CALENDAR YEARS.

Exported to—	1918	1919	1920
Belgium	$28,718	$532,532	$1,279,309
Germany		33,280	
Italy	5,426	226,245	
England	198,022	1,508,460	
Scotland		263	
Canada	1,278,000	1,021,014	
Mexico	999,569	805,614	
Jamaica	129,825	156,822	
Cuba	1,454,090	2,013,071	
Argentina	1,429,647	1,788,147	
Brazil	389,822	1,018,055	
Chile	951,102	795,440	
Uruguay	213,290	645,970	
Venezuela	136,881	226,953	
Dutch East Indies	519,535	686,873	
Philippines	982,224	1,372,544	
British South Africa	591,378	479,934	
All other	5,206,092	15,613,442	
Total	14,511,621	28,924,659	52,044,343

TIRES—ALL OTHER.

FISCAL YEARS.

Exported to—	1913	1914	1915	1916	1917	1918
Belgium	$466	$534				
Germany	1,658	202				
Italy	3,070	8,820	$31,293	$411,666	$144,844	$7,241
England	119,728	96,071	190,597	1,306,699	1,063,585	36,676
Scotland				15,331		
Canada	17,757	22,429	13,888	30,487	49,493	92,707
Mexico	47,683	23,534	19,935	33,096	65,364	48,019
Jamaica	241	586	12,570	19,380	10,587	12,116
Cuba	106,114	95,567	70,832	139,892	174,132	116,859
Argentina	16,039	7,553	7,439	97,793	99,868	239,321
Brazil	32,864	5,931	8,833	113,073	31,818	15,995
Chile	31,076	19,805	17,250	34,751	22,941	54,815
Uruguay	8,730	16,222	7,146	26,217	22,282	6,070
Venezuela	160	1,418	750	7,207	24,869	1,072
Dutch East Indies	1,516	3,599	804	20,756	60,083	16,278
Philippines	37,512	93,801	81,914	146,777	100,484	155,055
British South Africa	6,759	5,153	20,405	116,391	97,621	29,131
All other	180,195	160,047	92,947	482,961	579,681	409,315
Total	611,548	563,372	576,602	3,003,077	2,547,652	1,130,623

CALENDAR YEARS.

Exported to—	1918	1919	1920
Belgium		$54,492	
Germany		90	
Italy	$283	136,640	
England	19,665	901	
Canada	66,452	1,343	
Mexico	50,769	6	
Jamaica	12,814	3,616	
Cuba	103,071	7,832	
Argentina	89,519	84,051	
Brazil	8,115	27,362	
Chile	43,809	26,720	
Uruguay	101	2,555	
Venezuela	2,789	2,372	
Dutch East Indies	14,764	40,335	
Philippines	133,513	125,522	
British South Africa	23,268	27,937	
All other	186,958	1,015,453	
Total	755,888	1,557,227	$1,029,672

Domestic exports—Continued.

INDIA RUBBER MANUFACTURES—Continued.

ALL OTHER.

FISCAL YEARS.

Exported to—	1913	1914	1915	1916	1917	1918
Belgium	$57,969	$34,462	$2,419			
Denmark	6,560	5,626	24,530	$12,787	$32,353	$713
France	140,077	74,259	87,811	522,757	928,943	1,031,684
Germany	376,899	382,930	37,032	120		
Italy	40,908	19,496	30,806	118,922	132,901	182,982
England	1,039,274	1,015,960	1,550,567	3,165,609	2,443,481	1,300,981
Scotland	12,949	3,721	42,511	31,771	13,687	463
Canada	1,159,955	926,813	787,970	1,553,094	1,871,942	1,474,078
Panama	24,922	38,132	29,706	45,387	50,286	38,010
Mexico	104,369	91,732	50,128	61,062	184,578	178,613
Cuba	144,000	133,360	178,459	336,483	449,994	374,330
Argentina	76,405	49,895	75,569	206,315	273,641	172,952
Brazil	81,585	53,722	67,567	199,889	256,182	156,259
Chile	24,812	27,383	27,653	73,631	139,525	124,466
Japan	86,364	60,283	55,645	106,188	139,239	106,031
Australia	114,787	107,026	83,651	147,453	180,467	197,118
New Zealand	58,074	49,066	31,966	86,223	246,224	105,805
Philippine Islands	118,005	123,814	120,275	103,662	114,395	170,982
All other	245,122	255,792	241,221	519,172	807,671	579,349
Total	3,913,036	3,453,472	3,525,486	7,290,345	8,265,509	6,194,816

CALENDAR YEARS.

Exported to—	1918	1919	1920
Belgium		$64,813	
Denmark	$6,006	173,646	
France	910,898	1,159,438	
Germany		11,746	
Italy	229,308	43,818	
England	718,118	1,499,693	
Scotland		5,669	
Canada	1,730,564	2,157,484	
Panama	34,092	40,264	
Mexico	127,598	259,397	
Cuba	386,503	419,288	
Argentina	165,544	272,768	
Brazil	95,974	273,095	
Chile	142,355	139,736	
Japan	129,559	276,280	
Australia	199,893	199,569	
New Zealand	112,009	124,917	
Philippine Islands	259,465	437,567	
All other	514,193	1,438,583	
Total	5,762,079	9,097,773	$8,717,830

STRAW AND PALM LEAF—MANUFACTURES OF.

FISCAL YEARS.

Exported to—	1913	1914	1915	1916	1917	1918
Denmark			$326	$1,912	$3,647	
France	$467	$325	2,010	875	2,458	
Germany	1,515	3,389	70			
England	28,633	31,867	24,234	15,861	26,190	$2,035
Canada	705,125	651,085	506,899	414,978	510,954	141,709
Panama	26,240	18,609	19,841	29,879	32,528	7,912
Honduras	2,890	5,401	6,849	4,053	5,801	449
Mexico	22,335	8,647	20,517	14,028	43,136	15,312
Jamaica	3,752	2,802	1,450	2,811	3,400	477
Cuba	30,589	11,643	18,694	62,837	174,809	397,698
Brazil	3,441	882	6,208	12,030	7,198	6,668
Argentina	532	2,579	2,467	15,631	38,506	57,480
Colombia	4,180	3,751	3,101	21,511	39,358	32,950
Australia	10,797	9,877	7,732	9,377	31,830	3,829
Philippines	7,076	5,436	9,710	14,338	6,437	8,274
British South Africa	1,054	922	2,193	953	3,367	2,398
All other	42,035	42,289	48,191	70,090	121,213	38,202
Total	886,661	799,507	680,492	691,164	1,050,842	715,393

Domestic exports—Continued.

STRAW AND PALM LEAF—MANUFACTURES OF—Continued.

CALENDAR YEARS.

Exported to—	1918	1919	1920
Denmark		$2,600	
France		408	
Germany		250	
England		20,396	
Canada	$164,216	264,263	
Panama	6,839	3,906	
Honduras	559	1,359	
Mexico	13,558	28,644	
Jamaica	201	2,330	
Cuba	490,179	331,964	
Brazil	6,077	63,280	
Argentina	87,341	52,658	
Colombia	12,822	20,427	
Australia	3,126	19,163	
Philippines	8,194	5,196	
British South Africa	5,296	688	
All other	49,301	108,898	
Total	849,709	926,430	$1,602,941

WHALEBONE (FISCAL YEARS).

Exported to—	1913		1914		1915	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
France	71,865	$114,592	23,525	$34,294	205	$695
Germany	5,186	7,607	11,509	23,871		
Norway					24,940	29,639
England	28,700	59,893			2,936	2,214
All other	403	846			30	95
Total	106,174	182,938	35,634	58,165	28,111	32,643

Exported to—	1916		1917 [1]	
	Pounds.	Value.	Pounds.	Value.
France	31,075	$37,379	12,961	$21,900
England	2,466	3,083	19,288	24,606
Canada	11,299	12,700	8,293	6,684
All other	94	238	175	527
Total	44,934	53,400	40,717	53,717

[1] Included in "All other articles" after 1917.

India rubber manufactures.

FOOTWEAR—PRICES WHOLESALE, PER PAIR, BOSTON, 1913-1918.

[From War Industries Board Price Bulletin No. 30.]

Year.	Arctics.	Year.	Arctics.
1913	$1.27	1916	$1.14
First quarter	1.24	First quarter	1.14
Second quarter	1.24	Second quarter	1.14
Third quarter	1.31	Third quarter	1.14
Fourth quarter	1.31	Fourth quarter	1.14
1914	1.18	1917	1.33
First quarter	1.18	First quarter	1.31
Second quarter	1.18	Second quarter	1.31
Third quarter	1.18	Third quarter	1.35
Fourth quarter	1.18	Fourth quarter	1.38
1915	1.18	1918	1.65
First quarter	1.18	First quarter	1.65
Second quarter	1.18	Second quarter	1.65
Third quarter	1.18	Third quarter	1.65
Fourth quarter	1.18	Fourth quarter	1.65

India rubber manufactures—Continued.

WATER HOSE—PRICES WHOLESALE, NEW YORK.

[From War Industries Board Price Bulletin No. 30.]

Year.	Price per foot.	Year.	Price per foot.
1913	$0.060	1916	$0.0675
First quarter	.060	First quarter	.060
Second quarter	.060	Second quarter	.070
Third quarter	.060	Third quarter	.070
Fourth quarter	.060	Fourth quarter	.070
1914	.060	1917	.0783
First quarter	.060	First quarter	.0750
Second quarter	.060	Second quarter	.0750
Third quarter	.060	Third quarter	.0783
Fourth quarter	.060	Fourth quarter	.0850
1915	.060	1918	.1220
First quarter	.060	First quarter	.0950
Second quarter	.060	Second quarter	.1233
Third quarter	.060	Third quarter	.1350
Fourth quarter	.060	Fourth quarter	.1350

TIRES AND TUBES—PRICES, WHOLESALE, AKRON, OHIO—SINGLE TIRE OR TUBE.

[From War Industries Board Price Bulletin No. 30.]

Year.	Pneumatic plain tread, 30 by 3½.	Pneumatic nonskid, 30 by 3½.	Pneumatic nonskid, 33 by 4.	Pneumatic tubes, 33 by 4.	Solid, 36 by 5.
1913	$13.90	$17.40	$25.68	$4.14	$39.27
First quarter	15.10	18.96	27.99	4.51	39.27
Second quarter	13.60	17.06	25.19	4.06	39.27
Third quarter	13.60	17.06	25.19	4.06	39.27
Fourth quarter	13.31	16.47	24.35	4.06	39.27
1914	12.74	15.36	22.67	3.65	39.27
First quarter	12.74	15.36	22.67	3.65	39.27
Second quarter	12.74	15.36	22.67	3.65	39.27
Third quarter	12.74	15.36	22.67	3.65	39.27
Fourth quarter	12.74	15.36	22.67	3.65	39.27
1915	9.46	10.71	17.34	2.98	36.43
First quarter	10.35	12.31	18.80	3.16	30.20
Second quarter	9.16	10.29	16.86	2.92	33.07
Third quarter	9.16	10.29	16.86	2.92	31.55
Fourth quarter	9.16	10.29	16.86	2.92	30.80
1916	10.08	11.31	18.55	3.23	37.26
First quarter	10.08	11.31	18.55	3.23	37.26
Second quarter	10.08	11.31	18.55	3.23	37.26
Third quarter	10.08	11.31	18.65	3.23	37.26
Fourth quarter	10.08	11.31	18.55	3.23	37.26
1917	12.58	13.98	23.97	3.80	44.63
First quarter	11.12	12.63	21.56	3.54	41.02
Second quarter	12.51	13.52	23.71	3.88	41.02
Third quarter	12.93	13.89	24.51	3.88	44.63
Fourth quarter	13.78	15.36	26.10	3.88	51.89
1918	14.85	17.12	28.72	4.16	55.85
First quarter	13.78	15.36	26.10	3.88	51.89
Second quarter	15.20	17.71	28.72	4.27	57.17
Third quarter	15.20	17.71	30.03	4.27	57.17
Fourth quarter	15.20	17.71	30.03	4.27	57.17

India rubber manufactures—Continued.

DRUGGISTS SUNDRIES—PRICES WHOLESALE, F. O. B. FACTORY—PER DOZEN.

[From War Industries Board Price Bulletin No. 20.]

	Water bottles.		Ice bags, cloth-lined.
	All rubber.	Average of 2 series.	
1913	$7.50	$9.15	$8.10
First quarter	7.50	9.15	8.10
Second quarter	7.50	9.15	8.10
Third quarter	7.50	9.15	8.10
Fourth quarter	7.50	9.15	8.10
1914	7.27	9.03	7.80
First quarter	7.33	9.06	8.10
Second quarter	7.25	9.02	8.10
Third quarter	7.25	9.02	7.50
Fourth quarter	7.25	9.02	7.50
1915	7.45	9.12	7.50
First quarter	7.33	9.06	7.50
Second quarter	7.50	9.15	7.50
Third quarter	7.50	9.15	7.50
Fourth quarter	7.50	9.15	7.50
1916	8.06	9.88	8.00
First quarter	7.50	9.15	8.00
Second quarter	8.25	10.12	8.00
Third quarter	8.25	10.12	8.00
Fourth quarter	8.25	10.12	8.00
1917	8.25	11.03	.....
First quarter	8.25	10.62	.....
Second quarter	8.25	10.87	.....
Third quarter	8.25	11.32	.....
Fourth quarter	8.25	11.32	.....
1918	9.60	12.46	.....
First quarter	8.25	11.32	.....
Second quarter	9.35	11.87	.....
Third quarter	10.30	13.15	.....
Fourth quarter	10.50	13.50	.....

Manufactures of bone, chip, grass, straw, india rubber, etc.—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1913	368	Manufactures of bone, chip, grass, horn, india rubber or gutta-percha, palm leaf, quills, straw, weeds, or whalebone, or of which any of them is the component material of chief value, not otherwise specially provided for in this section, shall be subject to the following rates; manufactures of india rubber or gutta-percha, commonly known as druggists' sundries:	15 per cent ad valorem.
		Manufactures of india rubber or gutta-percha, not specially provided for in this section.	10 per cent ad valorem.
		Palm leaf	15 per cent ad valorem.
		Bone, chip, horn, quills, and whalebone	20 per cent ad valorem.
		Grass, straw, and weeds	25 per cent ad valorem.
		Combs composed wholly of horn or of horn and metal	Do.
		The terms "grass" and "straw" shall be understood to mean these substances in their natural state, and not the separated fibers thereof.	
1913	369	Manufactures of * * * vulcanized india rubber known as "hard rubber," or of which these substances or any of them is the component material of chief value, not specially provided for in this section.	Do.
1913	643	Whalebone, unmanufactured	Free.
1909	403	Manufactures of bone, chip, grass, horn, quills, india rubber, palm leaf, straw, weeds, or whalebone, or of which these substances or any of them is the component material of chief value, not specially provided for in this section.	35 per cent ad valorem.
		But the terms "grass" and "straw" shall be understood to mean these substances in their natural form and structure, and not the separated fiber thereof.	
		Sponges made of rubber	40 per cent ad valorem.
		Combs, composed wholly of horn, or composed of horn and metal.	50 per cent ad valorem.
1909	404	Manufactures of gutta-percha, * * * vulcanized india rubber known as "hard rubber," or of which these substances or any of them is the component material of chief value, not specially provided for in this section.	35 per cent ad valorem.

Manufactures of bone, chip, grass, straw, india rubber, etc.—Rates of duty—Continued.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1909....	710	Whalebone, unmanufactured	Free.
1897....	449	Manufactures of bone, chip, grass, horn, india rubber, palm leaf, straw, weeds, or whalebone, or of which these substances or either of them is the component material of chief value, not specially provided for in this act. But the terms "grass" and "straw" shall be understood to mean these substances in their natural form and structure, and not the separated fiber thereof.	30 per cent ad valorem.
1897....	450	Manufactures of * * * gutta-percha, * * * and vulcanized india rubber known as "hard rubber," or of which these substances or either of them is the component material of chief value, not specially provided for in this act.	35 per cent ad valorem.
1897....	698	Whalebone, unmanufactured	Free.
1894....	352	Manufactures of bone, chip, grass, horn, india rubber, palm leaf, straw, weeds, or whalebone, or of which these substances or either of them is the component material of chief value, not specially provided for in this act. But the terms "grass" and "straw" shall be understood to mean these substances in their natural form and structure, and not the separated fiber thereof.	25 per cent ad valorem.
1894....	353	Manufactures of * * * gutta percha, vulcanized india rubber, known as "hard rubber" * * * or of which these substances or either of them is the component material of chief value, all of the above not specially provided for in this act.	30 per cent ad valorem.
1894....	671	Whalebone, unmanufactured	Free.
1890....	460	Manufactures of bone, chip, grass, horn, india rubber, palm lead, straw, weeds, or whalebone, or of which these substances or either of them is the component material of chief value, not specially provided for in this act.	30 per cent ad valorem.
1890....	461	Manufactures of gutta percha, vulcanized india rubber, known as "hard rubber," * * * or of which these substances or either of them is the component material of chief value, all of the above not specially provided for in this act.	35 per cent ad valorem.
1890....	753	Whalebone, unmanufactured	Free.
1883....	395	Baskets and all other articles composed of grass, * * * palm leaf, whalebone, or willow, or straw, not specially enumerated or provided for in this act.	30 per cent ad valorem.
1883....	454	Articles composed of india rubber, not specially enumerated or provided for in this act.	25 per cent ad valorem.
1883....	455	India-rubber boots and shoes	Do.
		Gutta-percha, manufactured, and all articles of, not specially enumerated or provided for in this act.	35 per cent ad valorem.

Court and Treasury Decisions.

Mats made of braids of straw sewn together with cotton were held properly classified under this paragraph and not dutiable under paragraph 272 as mats or rugs of straw having a warp of cotton. (Akano *v.* United States, 6 Ct. Cust. Appls., 379, of 1915.)

The provision for manufactures of chip in this paragraph is more specific than the provision for manufactures of wood in paragraph 176 in the case of ropings made of wood, chip, and cotton, chip chief value. (United States *v.* Kronfield, 7 Ct. Cust. Appls., 93, of 1916.)

Dyed straw is not straw in its "natural state" within this paragraph, and leaves and flowers for millinery, made of straw which have been dyed but the fibers of which have not been separated, are excluded therefrom and classable under paragraph 347 as articles in chief value of artificial leaves and flowers. (United States *v.* Gage, 8 Ct. Cust. Appls., 306, 378, of 1918.)

Colored chip-straw millinery ornaments, crudely resembling flowers and leaves, were held likewise dutiable. (United States *v.* Rosenthal-Sloan, 8 Ct. Cust. Appls., 380, of 1918.)

But millinery ornaments consisting of strands of natural straw twisted together loosely and looped or tied, used as centerpieces in the crowns of straw hats, forming the starting points, are within this paragraph rather than paragraph 347. (Abstract 40979, of 1917.)

Palm-leaf baskets (T. D. 36409, of 1916); baling twine consisting of two strands of grass, braided (Abstract 36906; T. D. 34933, of 1914); india rubber bulbs used on pyrographic outfits (Abstract 37299, of 1915); bottle covers and caps of palm leaf (Abstract 36970; T. D. 34969, of 1914); rubber-faced cloth used in making card clothing (Abstract 38775, of 1915); rubber flower syringes (Abstract 37562, of 1915); and so-called paintings on straw mattings (T. D. 35163, of 1915) have been held dutiable under this paragraph.

The language of successive tariff acts show that Congress has regarded india rubber and hard rubber as different things for tariff purposes. Syringes, tubes, combs, and breast pumps, in chief value of hard rubber, are dutiable as "manufactures of * * * vulcanized india rubber, known as 'hard rubber'" and not as "manufactures of india rubber * * * commonly known as druggists' sundries." (Knauth *v.* United States, 8 Ct. Cust. Appls., 102, of 1917.)

Whalebone strips, tied in bundles, assessed with duty under paragraph 343 of the act of 1909, were held free as whalebone unmanufactured under paragraph 710 of the act of 1909. (Abstract 32241; T. D. 33409, of 1913.)

Chip roping in skeins or in the form of bells, consisting of shavings planed from wooden blocks and woven or bound together with cotton cords and then cut parallel to the cords, thus forming chip rope, was held properly classified as a manufacture of chip under paragraph 368 and not as shavings of wood under paragraph 176, nor as an unenumerated article under paragraph 385. (Abstracts 43628 and 43863 of 1920.) "In their natural state" in paragraph 368 of the act of 1913 is broader than "in their natural form and structure" in paragraph 463 of the act of 1909. Paragraph 368 comprehends split straw, so long as the splitting has not resulted in a decortication of the fibers. Split straw and chip material for the manufacture of millinery ornaments, too crude for classification under paragraph 347, come within paragraph 368. (Isler *v.* United States, 10 Ct. Cust. Appls., —; T. D. 38339 of 1920; Abstract 43745 of 1920.)

Horn strips, undrilled, cut into uniform lengths, scraped smooth or polished, or with ends cut square, or with the ends rounded off, are classified under paragraph 368 and not under paragraph 511 of the act of 1913. (T. D. 38351 of 1920.)

Dyed straw is not straw in its natural state within that expression in paragraph 368 of the act of 1913, and articles made of it are not dutiable thereunder. Judicial notice is taken that certain exhibits made of straw are dyed. (Johnson *v.* United States, 10 Ct. Cust. Appls., —; T. D. 38333 of 1920.)

Millinery ornaments in chief value of straw, but not in imitation of fruits, grains, leaves, flowers, and stems, come within paragraph 368 when in chief value of undyed straw and within paragraph 385 as unenumerated manufactures when in chief value of dyed straw. (Cochran *v.* United States, 10 Ct. Cust. Appls., —; T. D. 38336; T. D. 44017, of 1920.)

Artificial leaves and flowers in chief value of straw were held dutiable at 25 per cent and those in chief value of chip at 20 per cent under paragraph 368 of the act of 1913. (Abstract 44021 of 1920.)

IVORY, MOTHER-OF-PEARL, SHELL AND HORN, AND MANUFACTURES OF, ETC.

GENERAL INFORMATION.

1913 TARIFF PARAGRAPHS.

PAR. 369. Ivory tusks in their natural state, or cut vertically across the grain only, with the bark left intact, 20 per cent ad valorem; manufactures of ivory or vegetable ivory, or of which either of these substances is the component material of chief value, not specially provided for in this section, 35 per cent ad valorem; manufactures of mother-of-pearl and shell, plaster of Paris, papier-mâché, and vulcanized india rubber known as "hard rubber," or of which these substances or any of them is the component material of chief value, not specially provided for in this section, 25 per cent ad valorem; shells engraved, cut, ornamented, or otherwise manufactured, 25 per cent ad valorem.

PAR. 368. Manufactures of bone, * * * horn * * * not specially provided for in this section * * * 20 per cent ad valorem; * * * combs composed wholly of horn or of horn and metal, 25 per cent ad valorem.

PAR. 511. Horns and parts of, including horn strips and tips, unmanufactured. Free.

PAR. 570. Pearl, mother of, and shells, not sawed, cut, flaked, polished, or otherwise manufactured, or advanced in value from the natural state. Free.

PAR. 628. Teeth, natural, or unmanufactured. Free.

Manufactures of india rubber known as "hard rubber." (See par. 368.)

Manufactures of plaster of Paris. (See par. 74.)

DESCRIPTION AND USES.

Mother-of-pearl is the hard, pearly, internal layer of several kinds of shells, especially of pearl oysters, river mussels, and abalone shells. The shells are found in the greatest perfection on the coasts of Ceylon, in the Persian Gulf, and in the Australian seas. Fresh-water shells of the mollusk have been found in the Mississippi River and tributary streams and to a small extent in other American rivers. It is used largely in the arts, particularly for inlaid work in toys, knife, opera glass, and other handles, and very largely for buttons. Other shell employed for various purposes include snail, starfish, and tortoise shell. The last is used extensively for combs, hairpins, and similar hair ornaments; in inlay work; for ornamental boxes and other ornamental purposes.

Horn and horn strips and tips are used chiefly for making combs and hair ornaments, knife handles, and various novelties such as napkin rings. Natural teeth of animals are not in demand commercially except for ornamental purposes. The teeth of some animals were formerly used in dentistry, but artificial teeth are now entirely used.

Ivory tusks are mainly those of the African elephant, these constituting the best part of commercial ivory. Other sources are the tusks of fossil elephants found in Russia, Siberia, and Alaska; and the teeth of the narwhal, walrus, and hippopotamus. These latter are inferior to elephant tusks, which are considered true ivory. Manufactures of ivory include numerous articles useful and ornamental, such as toilet articles, statuettes, and piano keys, the demand for the last being so great that imitation products must be drawn upon to meet requirements. Vegetable ivory manufactures consist of handles of umbrellas, toilet articles, small trinkets, etc. Buttons, the chief manufacture of this material as well as of mother-of-pearl and shell, are specially provided for and therefore do not come within the provisions of this paragraph.

Papier-mâché is a tough, plastic substance made from paper pulp mixed with glue, paste, oil, resin, or other sizing. It is used in boxes, trays, and similar articles, and is also employed in interior decorations of houses, for cornices, ceilings, etc.

DOMESTIC PRODUCTION.

Production data are not completely available. The domestic output of horn and horn strips comes from the packing plants. Those sold to the button makers are assorted into three grades, known commercially as Nos. 1, 2, and 3, ranging from $260 to $125 per ton. Practically all domestic mother-of-pearl and shell is derived from the mussels of the Mississippi River and its tributaries. A survey by the Bureau of Fisheries indicates that the production varies from 40,000 to 60,000 tons per year, with a value of between $800,000 and $1,000,000. About 1,000 persons are engaged in the domestic pearl fishery.

Unspecified manufactures of ivory, mother-of-pearl, shell, horn, and bone are grouped by the Census of Manufactures under the classification "Ivory, shell, and bone work," with total production for 1914 of $1,896,000. This, however, does not completely cover production of this industry, as such articles as combs, hairpins, and piano keys are not included. Separate data are given for combs and hairpins not made from metal or rubber, which, however, include products made from fiber and celluloid. The total production in 1914 was $5,478,000. With reference to this classification, it was stated in the 1913 tariff hearings by a manufacturer that horn combs composed only about $500,000 of a total of $8,275,932 in 1910. The horn combs generally sell at low prices, the majority at 5 and 10 cents, and thus probably constitute the smallest portion of the value under the classification. The combs, hairpins, and various other ornaments which are made of bone, ivory, and tortoise shell are more expensive than the horn combs, and it may be assumed that their value forms a very large portion of the total shown. In addition

to the value shown for these two groups, ivory, shell, and bonework to the value of $250,608 was reported by establishments assigned to other classifications.

ORGANIZATION.

In 1914 there were 54 establishments classified as manufacturers of ivory, shell, and bone work, and 66 establishments as manufacturers of combs and hairpins, not made from metal or rubber. The former group employed 795 wage earners with wages of $391,000 and capitalization of $1,160,000; the latter, 2,773 wage earners, with total wage of $1,393,000 and capitalization of $2,959,000. New York and Massachusetts are the leading States under each classification.

EXPORTS.

Exports of shells in 1919 amounted to $574,575, chiefly to United Kingdom, Canada, and France. Germany, a large buyer of American shells prior to the war, in 1919 imported $22,752 worth. Exports of ivory are not shown subsequent to 1917. In that year they amounted, including manufactures and scrap, to $175,458, most of which was sent to Canada. Bone manufacturers are not separately shown after 1917. The exports in that year were $103,477, the highest.

IMPORTS.

Mother-of-pearl and shell are imported chiefly from Australia, French Oceania, and the Straits Settlements. Shipments of considerable value are also made from the Philippines. In 1920 the value of mother-of-pearl importations was $2,460,677; of shells not sawed, cut, or otherwise manufactured, $272,663. The value of shells advanced in value is not large, averaging between 1908 and 1918 about $39,000. The value in 1919 was lowest ($4,504). Manufactures of shell and mother-of-pearl are principally from England, France, and Japan. In 1920 their value was $47,560.

Tusks are imported chiefly from England, Belgian Congo, and Egypt. In 1920 imports for consumption amounted to $2,184,164. Manufactures of ivory are chiefly from England, France, and Japan, as are also manufactures of bone and horn, including combs. The manufactures of ivory are chiefly of true ivory, very little of the imports being manufactures of vegetable ivory. Formerly Scotland was a very large exporter of horn and bone products to the United States, but in recent years the amount has decreased and the majority of exports from the United Kingdom are from England. The imports of ivory manufactures in 1920 was $140,314; of bone and horn products, $198,595, of which $73,262 was combs.

TARIFF HISTORY.

Under the tariff act of 1883 manufactures of bone, horn, ivory, or vegetable ivory, not specially enumerated or provided for, were dutiable at 30 per cent ad valorem; shells, whole or parts of, manufactured of every description, n. s. p. f., at 25 per cent ad valorem. The act of 1890 increased both these duties to 40 per cent ad valorem. This act included mother-of-pearl in this group, but eliminated manu-

actures of bone and horn. The duty was reduced to 35 per cent by the act of 1894 and remained the same under the acts of 1897 and 1909. At present manufactures of ivory and vegetable ivory are dutiable at 35 per cent; manufactures of mother-of-pearl, shell, and papier-mâché, at 25 per cent; and shells, engraved, cut, ornamented, or otherwise manufactured, at 25 per cent.

Papier-mâché was dutiable at 35 per cent under the act of 1890; at 30 per cent under that of 1894; 35 per cent under that of 1897 and 1909.

The duty on manufactures of bone and horn remained at 30 per cent under the act of 1890; was reduced to 25 per cent in 1894; again placed at 30 per cent in 1897, and increased to 35 per cent under the act of 1909. It is now dutiable at 20 per cent.

Combs were not specifically mentioned in the acts between that of 1883 and 1909. All combs were dutiable by the act of 1883 at 30 per cent. In 1909 the duty on combs composed of horn or horn and metal was placed at 50 per cent. It is now 25 per cent.

Unmanufactured mother-of-pearl, shell, ivory, and vegetable ivory, horns and parts of, and unmanufactured teeth, have been free.

COMPETITIVE CONDITIONS.

Imports are mostly of raw materials which do not enter into competition with domestic products. Shells and mother-of-pearl imported are salt-water shells chiefly, differing in quality from the domestic fresh-water shells. The only manufactures which appear to offer serious competition are those of horn and bone, especially horn combs.

In a brief filed by American manufacturers in 1913 it is stated that labor costs in Europe were less than one-third of American wages, this applying particularly to Scotland, whose competition was most seriously felt, that the work was done chiefly by women and children, and that American machinery was in use, which tended to still further reduce the labor cost.[1] Our census reports for 1914 show that this work is done here mostly by men, 74.4 per cent of the wage earners being male. The foreign manufacturers also have an advantage in the raw material, the practice in this country of dehorning cattle making it necessary for domestic manufacturers to import horns to a large extent. The reduction of duty in 1913 was followed by a temporary increase in the amount of imports, the total for 1914 being the highest reached. The increase did not continue, the values for the following years being less than those for the years prior to 1914. This decrease may have been due to war conditions, but there was no increase with the close of the war, the totals for 1918 and 1919 being very much lower than the average. For 1920 the imports are the highest since 1914, although not as high as before 1914. Scotland formerly was the most serious competitor, but imports from there are now very small, while those from England also have decreased slightly. Japan, however, is exporting some quantities to us.

[1] Brief [illegible] 1913, Vol. V, p. 4004.

TARIFF CONSIDERATIONS.

Vegetable ivory in its natural state is not specifically provided for in the present tariff. It is admitted free under paragraph 552 as "vegetable substances, crude or unmanufactured, not otherwise specially provided for." The imports of this material are large enough to be specifically provided for in the free list.

Gallilith might be added to the articles enumerated in paragraph 369. It is a plastic substance, similar in appearance to pyroxylin, but different in composition. It is used for much the same purposes as ivory or mother-of-pearl, such as buttons, beads, umbrella and cane handles, cigar and cigarette holders, necklaces, watch fobs, sautoirs, etc.

DOMESTIC PRODUCTION.

Combs and hairpins, not made from metal or rubber.

[Census of Manufactures, 1914.]

Year.	Number of establishments.	Wage earners.	Capital.	Wages.	Value of products.
1914	66	2,773	$2,959,000	$1,393,000	$5,478,000
1909	81	4,555	5,070,000	2,166,000	8,376,000
1904	42	1,806	1,112,000	758,000	2,769,000
1899	34	1,399	833,000	572,000	1,976,000

Ivory, shell, and bonework, not including combs and hairpins.

[From Census of Manufactures, 1914.]

Year.	Number of establishments.	Wage earners.	Capital.	Wages.	Value of products.
1914	54	795	$1,160,000	$391,000	$1,896,000
1909	52	907	1,159,000	466,000	1,865,000
1904	66	1,769	1,269,000	777,000	2,864,000
1899	70	1,334	940,000	529,000	1,873,000

The products of establishments under the classification ivory, shell, and bonework include a wide variety of articles for use or ornament. In addition to the products covered by the two tables, ivory, shell, and bone work to the value of $250,608 was reported by establishments assigned to other classifications. The table for combs and hairpins includes products made from fiber and celluloid in addition to those made from bone, ivory, shell, and horn. The figures for 1909 include data for a number of establishments which were included under ivory, shell, and bonework in 1904, the decrease between 1904 and 1909 in the second table is, therefore, only apparent. With this exception the figures in the second table may be properly considered comparable for the different years, but for the first table they are not, owing to various changes of classification.

Imports by countries.

SHELLS, AND MANUFACTURES OF.

UNMANUFACTURED—MOTHER-OF-PEARL.

FISCAL YEARS.

Imported from—	1913	1914	1915	1916	1917	1918
Austria-Hungary	$4,604	.....	$17	.....	.....	.....
France	43,417	$15,613	54,001	$19,292	$3,175	.....
Germany	6,244	1,207	3,289	.....	.....	.....
Italy	.....	1,586	11,976	64,485	32,835	$11,227
Netherlands	23,075	29,728	46,203	3,185	.....	.....
England	635,014	890,331	729,812	957,805	434,510	82,117
Mexico	1,432	1,795	5,314	17,687	1,492	8,425
Straits Settlements	.....	3,952	.....	35,021	108,698	158,322
Dutch East Indies	48,064	9,137	2,480	135,163	97,678	75,354
Australia	348,187	246,549	102,099	478,383	1,183,680	1,278,080
French Oceania	10,189	12,968	5,594	45,046	182,092	115,786
Philippines	1,490	12,897	6,860	38,845	111,334	59,913
All other	14,236	8,132	19,462	75,850	82,477	187,522
Total	1,135,952	1,234,025	987,107	1,872,762	2,237,971	1,976,746

CALENDAR YEARS.

Imported from—	1918 (value).	1919		1920	
		Pounds.	Value.	Pounds.	Value.
England	$22,985	1,077,007	$444,409	.....	.....
Mexico	.....	770	60	.....	.....
Straits Settlements	106,108	75,277	34,338	.....	.....
Dutch East Indies	77,393	206,634	86,390	.....	.....
Australia	1,062,388	1,505,591	588,041	.....	.....
French Oceania	128,644	1,340,877	273,514	.....	.....
Philippines	102,272	236,640	71,495	.....	.....
All other	218,030	1,330,181	171,657	.....	.....
Total	1,717,820	5,772,977	1,669,904	7,629,951	$2,460,677

UNMANUFACTURED (ALL OTHER).

FISCAL YEARS.

Imported from—	1913	1914	1915	1916	1917	1918
Austria-Hungary	$32	$11,636	.....	.....	.....	.....
France	29,400	28,437	$4,790	$830	.....	$5
Germany	28,639	50,121	19,995	472	.....	.....
Italy	4,224	1,608	.....	11,499	$225	.....
Netherlands	4,936	5,131	6,003	16,897	.....	.....
England	500,377	401,044	203,935	78,110	44,227	12,995
Panama	23,389	1,869	9,143	40,860	49,461	45,403
Mexico	4,799	6,957	26,956	4,835	2,938	1,808
Straits Settlements	33,170	29,279	9,497	26,635	21,300	14,230
Dutch East Indies	19,545	3,578	.....	27,240	3,258	4,577
Philippine Islands	43,040	29,043	36,288	69,194	25,833	23,730
All other	59,556	20,157	28,959	86,508	50,387	.....
Total	751,457	588,860	341,566	357,080	197,629	250,864

Imports by countries—Continued.

SHELLS AND MANUFACTURES OF—Continued.

UNMANUFACTURED (ALL OTHER)—Continued.

CALENDAR YEARS.

Imported from—	1918	1919		1920	
		Pounds.	Value.	Pounds.	Value.
France	$29	391	$270	.....	.....
Italy	.....	176	232	.....	.....
England	9,279	91,127	47,387	.....	.....
Panama	55,044	65,300	93,050	.....	.....
Mexico	5,747	154,661	7,214	.....	.....
Straits Settlements	18,276	23,164	8,018	.....	.....
Dutch East Indies	.....	60,715	5,093	.....	.....
Philippine Islands	34,300	413,307	30,413	.....	.....
All other	188,071	1,386,980	302,851	.....	.....
Total	310,746	2,195,821	494,528	1,020,839	$272,663

MANUFACTURES OF.

FISCAL YEARS.

Imported from—	1913	1914	1915	1916	1917	1918
Austria-Hungary	$1,475	$3,065	$259	$49	.....	.....
France	13,367	21,253	11,016	4,713	$7,222	$2,974
Germany	15,503	20,710	16,507	2,604	231	.....
Italy	9,637	7,152	7,375	1,545	2,771	5,278
England	52,929	53,496	36,562	7,588	6,930	925
Japan	2,285	1,154	1,520	3,074	3,001	7,308
Turkey in Asia	17,388	16,290	2,871	194	.....	.....
All other	6,140	4,284	5,677	1,197	2,175	.....
Total	118,724	127,404	81,787	20,964	22,330	17,769

CALENDAR YEARS.

Imported from—	1918	1919	1920
Austria-Hungary	.....	$2,008	.....
France	$1,188	8,356	.....
Italy	1	742	.....
England	475	1,147	.....
Japan	2,948	2,341	.....
Turkey in Asia	114	736	.....
All other	787	3,673	.....
Total	5,549	19,003	$55,057

IVORY AND MANUFACTURES OF.

TUSKS IN THEIR NATURAL STATE.

FISCAL YEARS.

Imported from—	1913		1914		1915	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Belgium	311,604	$817,537	201,361	$537,277	.....	.....
Germany	42,947	141,005	26,803	113,385	24,665	$112,479
Italy	14	40	.....	.....	.....	.....
Norway	28	84	.....	.....	.....	.....
England	232,378	554,493	156,216	445,709	117,326	337,411
Canada	292	119	2,159	785	.....	.....
Aden	8,922	26,957	5,447	19,013	.....	.....
Russia in Asia	27,286	13,838	11,585	3,937	57,560	44,706
British East Africa	44,449	131,889	24,596	75,713	6,204	19,815
Egypt	54,267	135,396	46,620	132,058	33,737	87,248
Belgian Congo	.....	.....	5,346	12,661	29,320	60,158
All other	.....	.....	100	106	2,373	7,362
Total	722,187	1,821,358	480,233	1,340,644	271,185	1,669,179

Imports by countries—Continued.

IVORY AND MANUFACTURES OF—Continued.

TUSKS IN THEIR NATURAL STATE—Continued.

FISCAL YEARS—continued.

Imported from—	1916		1917		1918	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Belgium			60,719	$137,503		
Germany	1,978	$3,759				
England	435,988	947,656	350,034	769,250	165,008	$381,480
Canada	49,331	83,892	159,568	291,455	66,649	130,984
Aden	6,493	19,009				
Russia in Asia	6,713	1,422	6,513	1,405	15,155	3,852
Egypt	110,635	225,887	87,074	187,793	12,655	26,596
Belgian Congo			660	1,450	5,188	7,978
All other	3,948	8,047	2,332	3,848	45,999	80,539
Total	615,086	1,289,672	666,900	1,392,704	310,654	631,429

CALENDAR YEARS.

Imported from—	1918		1919		1920	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Belgium			31,596	$128,612		
England	180,795	$425,207	190,373	494,590		
Canada	29,063	61,776	8,466	23,497		
Russia in Asia	10,338	2,615	1,402	425		
Egypt	15,993	34,240	25,992	61,051		
Belgian Congo	19,275	27,703	45,014	73,757		
All other	51,769	87,982	3,119	4,399		
Total	297,241	619,523	305,962	786,331	667,525	$2,360,916

MANUFACTURES OF.[1]

FISCAL YEARS.

Imported from—	1913	1914	1915	1916	1917	1918
Austria-Hungary	$249	$764	$382	$142		
France	6,442	5,418	4,529	2,701	$2,486	$2,854
Germany	5,856	5,783	8,012	2,120		
England	3,957	12,491	7,674	8,385	10,737	10,410
Scotland		171	223	86	49	
China	3,130	3,062	1,987	1,385	3,106	1,786
British India	372	1,190	217			25
Hongkong	1,275	1,705	836	808	2,025	1,882
Japan	10,877	20,155	8,695	12,235	14,732	17,187
All other	1,698	1,675	2,138	1,377	2,441	652
Total	33,856	52,414	34,693	29,239	35,576	34,796

[1] Not separately shown after 1918.

Imports by countries—Continued.

IVORY AND MANUFACTURES OF—Continued.

VEGETABLE IVORY (TAGUA NUTS).

FISCAL YEARS.

Imported from—	1913		1914		1915	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
France			21,056	$479	44,440	$1,010
Germany	270,919	$6,203	1,428,237	53,351	205,023	3,969
Italy	93,964	2,377	56,000	1,156	250	5
England	137,122	2,320	371,105	8,159	79,375	1,934
Panama	6,033,775	228,954	5,209,774	187,373	3,888,226	76,690
Brazil			4,365	64	149,578	3,306
Colombia	4,228,743	183,447	7,917,433	283,544	8,894,550	242,998
Ecuador	16,817,404	487,400	10,413,539	304,605	6,828,300	160,399
Peru	479,475	18,645	634,180	15,419	598,242	6,708
Australia	134,536	5,783	156,855	6,087		
Egypt	715,107	11,215	869,102	19,000	277,034	10,439
All other	295,233	30,681	73,400	5,117	94,728	3,219
Total	29,206,278	977,525	27,135,046	881,354	21,059,746	510,677

Imported from—	1916		1917		1918	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Germany	800	$21				
England	94,628	2,808				
Panama	6,759,275	145,272	10,027,657	$272,325	8,120,895	$225,152
Argentina			393,600	7,197		
Brazil	29,970	533	180,777	3,272	745,340	17,639
Colombia	11,119,019	335,545	14,423,369	494,806	9,206,278	317,387
Ecuador	13,008,824	312,067	25,449,246	618,031	22,636,940	642,691
Peru	1,420,451	31,647	904,362	26,450	675,580	20,149
Australia	366,780	10,189	2,637	61		
Egypt	97,330	1,540				
All other	45,038	842	318,071	2,961	1,487,985	32,701
Total	32,942,115	840,464	51,699,719	1,427,780	42,873,018	1,255,719

CALENDAR YEARS.

Imported from—	1918		1919		1920	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
England			44,800	$3,893		
Panama	6,545,275	$197,832	3,695,050	110,885		
Brazil	735,631	15,513	117	12		
Colombia	10,782,517	386,720	5,534,369	254,828		
Ecuador	21,036,411	670,006	21,994,241	782,137		
Peru	676,559	17,919	298,338	10,180		
Australia			22,400	876		
Egypt			136,893	6,696		
All other	1,365,706	35,504	52,882	2,573		
Total	41,142,099	1,323,494	31,779,090	1,172,080	49,960,478	$2,550,697

Imports by countries—Continued.

BONE AND HORN, MANUFACTURES OF (INCLUDES COMBS)—Continued.

FISCAL YEARS.

Imported from—	1913	1914	1915	1916	1917	1918
Austria-Hungary	$5,615	$6,794	$1,454			
France	78,683	89,023	50,297	$44,506	$47,333	$25,958
Germany	21,717	32,363	13,084	3,030		
Italy	4,237	3,729	3,645	2,626	184	
Netherlands	8,092	8,400	9,248	785	1,822	
England	30,489	38,623	21,179	16,420	15,154	17,678
Scotland	32,177	51,098	24,617	21,293	6,999	2,154
China	1,548	530	502	1,229	1,624	1,201
Hongkong	534	209	174	532	2,081	1,529
Japan	8,360	5,247	5,720	9,310	17,164	27,298
All other	1,528	2,623	1,263	1,423	7,217	14,005
Total	192,980	238,639	131,183	101,622	99,578	89,423

CALENDAR YEARS.

Imported from—	1918	1919	1920
France	$11,303	$18,968	
Germany	68	641	
Italy		242	
Netherlands		100	
England	12,754	10,566	
Scotland	931	352	
China	547	1,151	
Hongkong	577	3,199	
Japan	22,250	16,817	
All other	10,929	8,151	
Total	59,359	60,187	$202,971

Imports for consumption.

SHELLS, NOT SAWED, CUT, FLAKED, POLISHED, OR OTHERWISE MANUFACTURED.

MOTHER OF PEARL.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:		*Pounds.*				*Per cent.*
1908	Free		$830,563			
1909	do		1,472,325			
1910	do		1,419,865			
1911	do		1,250,955			
1912	do		1,682,297			
1913	do		1,141,902			
1914	do		1,253,742			
1915	do		1,024,634			
1916	do		1,870,255			
1917	do		2,233,997			
1918	do		2,000,592			
Calendar year:						
1918	do		1,741,661			
1919	do	5,772,977	1,669,904		$0.289	
1920	do	7,629,951	2,460,677		.322	

Imports for consumption—Continued.

SHELLS, NOT SAWED, CUT, FLAKED, POLISHED, OR OTHERWISE MANUFACTURED—Continued.

ALL OTHER.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:		*Pounds.*				*Per cent.*
1908	Free		$301,902			
1909	do		417,461			
1910	do		388,831			
1911	do		633,826			
1912	do		559,786			
1913	do		732,812			
1914	do		572,423			
1915	do		303,401			
1916	do		359,567			
1917	do		202,104			
1918	do		227,018			
Calendar year:						
1918	do		286,900			
1919	do	2,195,821	494,528	$225		
1920	do	1,020,839	272,663	267		

SHELLS.

ENGRAVED, CUT, ORNAMENTED, OR OTHERWISE ADVANCED.

UNDER GENERAL TARIFF.

Fiscal year:						
1908	35 per cent		$80,421	$28,147		35
1909	do		68,324	29,913		35
1910	do		52,450	18,357		35
1911	do		49,728	17,404		35
1912	do		59,977	20,992		35
1913	do		54,840	19,194		35
1914	do		10,155	3,554		35
1914	25 per cent		28,744	7,186		25
1915	do		30,461	7,615		25
1916	do		6,938	1,734		25
1917	do		11,286	2,821		25
1918	do		12,468	3,117		25
Calendar year:						
1918	do		2,991	748		25
1919	do		3,990	997		25
1920	do		7,489	1,872		25

FROM PHILIPPINES.

Fiscal year:						
1908	75 per cent of 35 per cent.		$17	$4		26.25
1909	do		9	2		
1910	Free		245			
1911	do		50			
1912	do		47			
1913	do		100			
1914	do		88			
1915	do		75			
1916	do		9			
1917	do		380			
1918	do		251			
Calendar year:						
1918	do		83			
1919	do		514			
1920	do		1,932			

Imports for consumption—Continued.

TUSKS IN NATURAL STATE, OR CUT VERTICALLY ACROSS THE GRAIN ONLY, WITH BACK LEFT INTACT.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:		*Pounds.*				*Per cent.*
1908	Free	371,306	$1,148,632		$3.09	
1909	do	766,725	2,077,500		2.71	
1910	do	592,446	1,597,287		2.70	
1911	do	534,300	1,343,555		2.51	
1912	do	514,731	1,332,015		2.59	
1913	do	706,705	1,796,878		2.54	
1914	do	255,403	633,573		2.48	
1914	20 per cent	225,113	681,752	$136,350	3.03	20
1915	do	268,010	666,363	133,272	2.48	20
1916	do	601,120	1,257,098	251,419	2.09	20
1917	do	554,016	1,185,886	237,177	2.14	20
1918	do	386,688	764,446	152,889	1.97	20
Calendar year:						
1918	do	376,908	758,196	151,639	2.01	20
1919	do	347,531	862,010	172,402	2.48	20
1920 [1]	do	615,845	2,184,164	436,832	3.54	20

MANUFACTURES OF IVORY AND VEGETABLE IVORY. N. S. P. F.

UNDER GENERAL TARIFF.

Fiscal year:						
1908	35 per cent		$62,936	$22,027		35
1909	do		54,695	19,143		35
1910	do		49,448	17,306		35
1911	do		51,666	18,083		35
1912	do		44,445	15,556		35
1913	do		34,943	12,230		35
1914	do		51,697	18,094		35
1915	do		33,948	11,881		35
1916	do		28,784	10,074		35
1917	do		36,466	12,763		35
1918	do		28,316	9,910		35
Calendar year:						
1918	do		17,959	6,286		35
1919	do		32,214	11,274		35
1920	do		140,314	49,109		35

FROM PHILIPPINE ISLANDS.

Fiscal year:						
1908	75 per cent of 35 per cent.		$96	$25		26.25
1909	do		111	29		26.25
1910	do		1			
1910	Free		7			
1911			2			
1913			10			

FROM CUBA (RECIPROCITY TREATY, DEC. 27, 1903).

Fiscal year:						
1908	35 per cent less 20 per cent.		$63	$17		20.08
1911	do					

Imports for consumption—Continued.

VEGETABLE IVORY (TAGUA NUTS).

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:		*Pounds.*				*Per cent.*
1908	Free	14,536,570	$376,021		$0.025	
1909	do	20,001,094	608,684		.030	
1910	do	27,066,716	1,104,924		.041	
1911	do	20,782,911	771,970		.037	
1912	do	23,072,008	797,656		.035	
1913	do	28,983,791	970,978		.033	
1914	do	26,736,148	883,055		.033	
1915	do	21,052,749	510,677		.024	
1916	do	32,923,485	840,476		.025	
1917	do	50,511,819	1,427,790		.028	
1918	do	43,544,485	1,351,262		.031	
Calendar year:						
1918	do	41,142,099	1,323,494		.032	
1919	do	31,779,090	1,172,080		.036	
1920	do	49,690,478	2,550,697		.513	

TEETH, NATURAL AND UNMANUFACTURED.

Fiscal year:						
1908	Free		$1,859			
1909	do		10			
1910	do		355			
1911	do		186			
1912	do		223			
1913	do		343			
1914	do		197			
1915	do		340			
1916	do		212			
1917	do		345			
1918	do		25			
Calendar year:						
1919	do		703			
1920	do		2,185			

PAPIER-MÂCHÉ—MANUFACTURES OF.

Fiscal year:						
1908	35 per cent		$22,235	$7,782		35
1909	do		17,834	6,242		35
1910	do		22,040	7,714		35
1911	do		25,338	8,868		35
1912	do		20,492	7,172		35
1913	do		25,934	9,076		35
1914	do		4,278	1,497		35
1914	25 per cent		26,382	6,595		25
1915	do		19,851	4,962		25
1916	do		13,697	3,424		25
1917	do		9,812	2,453		25
1918	do		25,679	6,419		25
Calendar year:						
1918	do		18,978	4,745		25
1919	do		8,737	2,184		25
1920	do		33,024	8,256		25

BONE AND HORN, MANUFACTURES OF, N. S. P. F.

UNDER GENERAL TARIFF.

Fiscal year:						
1908	30 per cent		$240,743	$72,226		30
1909	do		173,961	52,188		30
1910	do		38,069	11,420		30
1910	35 per cent		109,045	38,165		35
1911	do		101,286	35,450		35
1912	do		78,260	27,517		35
1913	do		95,854	33,549		35
1914	do		28,250	9,887		35

Imports for consumption—Continued.

BONE AND HORN, MANUFACTURES OF, N. S. P. F.—Continued.

UNDER GENERAL TARIFF—Continued.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year—Con.						*Per cent.*
1914	20 per cent		81,658	16,331		20
1915	do		63,463	12,692		20
1916	do		59,846	11,969		20
1917	do		79,734	15,946		20
1918	do		74,992	14,962		20
Calendar year:						
1918	do		46,703	9,341		20
1919	do		51,291	10,258		20
1920	do		125,333	25,066		20
FROM PHILIPPINE ISLANDS.						
Fiscal year:						
1908	75 per cent of 30		$12	$2		22.50
1909	do		16	3		22.50
1910	Free		31			
1911	do		39			
1912	do		27			
1913	do		3			
1914	do		8			
1917	do		9			
1918	do		4			
Calendar year:						
1918	do		9			
1919	do		1,111			
FROM CUBA (RECIPROCITY TREATY. DEC. 27, 1903).						
Fiscal year:						
1909	30 per cent less 20		$3			
1911	35 per cent less 20		2			
1913	do		56	15		28

COMBS, COMPOSED WHOLLY OF HORN OR HORN AND METAL.

UNDER GENERAL TARIFF.

Fiscal year:						
1910	50 per cent		$58,111	$29,055		50
1911	do		103,510	51,755		50
1912	do		86,848	43,424		50
1913	do		93,681	46,840		50
1914	do		14,919	7,459		50
1914	25 per cent		112,218	28,054		25
1915	do		70,009	17,502		25
1916	do		41,914	10,478		25
1917	do		20,296	5,074		25
1918	do		12,375	3,093		25
Calendar year:						
1918			12,136	3,034		25
1919			8,874	2,218		25
1920			73,262	18,315		25
FROM PHILIPPINE ISLANDS (ACT OF MAR. 3, 1905).						
Fiscal year:						
1910	Free		$3			
FROM CUBA (RECIPROCITY TREATY, DEC. 27, 1903).						
Fiscal year:						
1910	50 per cent less 20 per cent.		$10	$4		

Domestic exports.

SHELLS.

FISCAL YEARS.

Exported to—	1913	1914	1915	1916	1917	1918
France	$14,231	$17,706	$2,299	$6,060	.....	$8,000
Germany	46,118	49,245	4,683	.....	.....	.....
Italy	6,484	7,273	6,120	17,513	$18,230	21,974
United Kingdom	59,705	49,179	41,505	29,521	17,130	43,289
Canada	29,712	23,315	17,182	38,722	65,922	81,260
British South Africa	570	1,584	590	1,028	3,381	11
All other	19,315	16,207	3,824	22,895	3,719	10,591
Total	173,135	164,559	76,203	117,739	108,482	165,125

CALENDAR YEARS.

Exported to—	1918	1919	1920
France	$8,000	$91,913	.....
Germany	.....	22,752	.....
Italy	12,008	51,808	.....
United Kingdom	17,280	225,093	.....
Canada	61,967	108,592	.....
British South Africa	.....	3,113	.....
All other	14,604	71,304	.....
Total	113,859	574,575	$412,045

IVORY, MANUFACTURES OF, AND SCRAP.[1]

FISCAL YEARS.

Exported to—	1913	1914	1915	1916	1917
France	$500	$925	.....	.....	.....
Germany	23,290	34,149	.....	.....	.....
Netherlands	112	1,205	.....	.....	.....
England	26,518	21,813	$14,532	$4,911	$28,902
Canada	4,406	2,707	2,279	63,762	136,131
Mexico	94	.....	.....	3,281	736
Cuba	144	.....	19	279	576
Hongkong	985	1,529	.....	.....	.....
Philippine Islands	.....	.....	14	1,576	1,022
All other	2,612	852	95	730	8,091
Total	57,761	63,180	16,939	74,539	175,458

BONE AND MANUFACTURES OF.[1]

Belgium	$6,356	$2,147	$18	.....	.....
France	22,413	2,201	.....	$9,859	$7,030
Germany	594	1,024	.....	.....	.....
England	14,171	10,330	2,929	1,454	8,661
Canada	4,207	2,375	1,173	6,259	35,058
Cuba	1,418	2,105	1,741	2,621	4,908
Japan	23,786	24,141	23,847	26,931	7,586
All other	4,631	3,328	5,088	20,412	40,234
Total	77,576	47,651	34,796	67,536	103,477

[1] Not separately stated after 1917.

Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1913....	369	Ivory tusks in their natural state, or cut vertically across the grain only, with the bark left intact, manufactures of ivory or vegetable ivory, or of which either of these substances is the component material of chief value, not specially provided for in this section, manufactures of mother-of-pearl and shell, plaster of Paris, papier-mâché, and vulcanized india rubber known as "hard rubber," or of which these substances or any of them is the component material of chief value, not specially provided for in this section.	20 per cent ad valorem. 35 per cent ad valorem. 25 per cent ad valorem.
		Shells engraved, cut, ornamented, or otherwise manufactured.	Do.
1913....	368	Manufactures of bone * * * horn * * * not specially provided for in this section. * * *	20 per cent ad valorem.
		Combs composed wholly of horn or of horn and metal.....	25 per cent ad valorem.
1913....	511	Horns and parts of, including horn strips and tips, unmanufactured.	Free.
1913....	570	Pearl, mother-of, and shells, not sawed, cut, flaked, polished, or otherwise manufactured, or advanced in value from the natural state.	Do.
1913....	628	Teeth, natural, or unmanufactured.....	Do.
1909....	464	Manufacturers of * * * ivory, vegetable ivory, mother-of-pearl and shell, plaster of Paris, papier mâché * * * or of which these substances or any of them is the component material of chief value, not specially provided for in this section, and shells engraved, cut, ornamented, or otherwise manufactured.	35 per cent ad valorem.
1909....	596	Ivory tusks in their natural state or cut vertically across the grain only, with the bark left intact, and vegetable ivory in its natural state.	Free.
1909....	463	Manufacturers of bone * * * horn, * * * not specially provided for in this section.	35 per cent ad valorem.
		Combs, composed wholly of horn or composed of horn and metal.	50 per cent ad valorem.
1909....	589	Horns and parts of, including horn strips and tips unmanufactured.	Free.
1909....	692	Teeth, natural, or unmanufactured.....	Do.
1897....	450	Manufactures of * * * ivory, vegetable ivory, mother-of-pearl and shell, plaster of Paris, papier mâché, and * * * or of which these substances or either of them is the component material of chief value, not specially provided for in this act, and shells engraved, cut, ornamented, or otherwise manufactured.	35 per cent ad valorem.
1909....	584	Ivory tusks in their natural state or cut vertically across the grain only, with the bark left intact, and vegetable ivory in its natural state.	Free.
1909....	449	Manufactures of bone * * * horn, * * * or of which these substances or either of them is the component material of chief value, not specially provided for.	30 per cent ad valorem.
1909....	577	Horns and parts of, unmanufactured, including horn strips and tips.	Free.
1909....	635	Pearl, mother-of, and shells, not sawed, cut, polished or otherwise manufactured, or advanced in value from the natural state.	Do.
1909....	680	Teeth, natural, or unmanufactured.....	Do.
1894....	353	Manufactures of * * * papier mâché * * * not specially provided for.	30 per cent ad valorem.
1894....	354	Manufactures of ivory, vegetable ivory, mother-of-pearl, * * * and shell, or of which these substances or either of them is the component material of chief value, not specially provided for.	35 per cent ad valorem.
1894....	519	Ivory, sawed or cut into logs, but not otherwise manufactured, and vegetable ivory.	Free.
1894....	613	Shells of all kinds, not cut, ground, or otherwise manufactured..	Do.
1894....	352	Manufactures of bone, * * * horn, * * * or of which these substances or either of them is the component material of chief value, not specially provided for in this act.	25 per cent ad valorem.
1894....	511	Horns, and parts of, unmanufactured, including horn strips and tips.	Free.
1890....	462	Manufactures of ivory, vegetable ivory, mother-of-pearl, and shell, or of which these substances or either of them is the component material of chief value, not specially provided for in this act.	40 per cent ad valorem.
1890....	460	Manufactures of bone, * * * horn, * * * or of which these substances or either of them is the component material of chief value, not specially provided for in this act.	30 per cent ad valorem.
1890....	461	Manufactures of * * * papier mâché * * * not specially provided for.	35 per cent ad valorem.
1890....	618	Ivory and vegetable ivory, not sawed, cut, or otherwise manufactured.	Free.
1890....	673	Pearl, mother-of, not sawed, cut, polished, or otherwise manufactured.	Do.
1890....	701	Shells of all kinds, not cut, ground, or otherwise manufactured....	Do.
1890....	733	Teeth, natural, or unmanufactured.....	Do.

Rates of duty—Continued.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883....	399	Bone, horn, ivory, or vegetable ivory, all manufactures of, not specially enumerated or provided for in this act.	30 per cent ad valorem.
1883....	486	Shells, whole or parts of, manufactured, of every description, not specially enumerated or provided for in this act.	25 per cent ad valorem.
1883....	726	Ivory, and vegetable ivory, unmanufactured	Free.
1883....	756	Pearl, mother-of	Do.
1883....	803	Teeth, unmanufactured	Do.
1883....	780	Shells of every description, not manufactured	Do.
1883....	513	Horns, and parts of horns, unmanufactured, and horn strips and tips.	Do.

Court and Treasury Decisions.

A *box* in chief value of wood, designed to contain an ivory toilet set, which was packed separately, was held dutiable with the toilet set as an entirety under the provision in paragraph 369 for manufactures of ivory. (Abstract 36870, T. D. 34920, of 1914.)

Heads of game animals, as cut from the carcass, are exempt from duty under paragraph 423, 511, or 604. (T. D. 34061, of 1914.) *Moose heads with skin attached* are held not to be classable as an entirety, but the horns and parts of separately from the skin. (Abstract 23064, T. D. 30547, of 1910.) *Elk* and *moose horns* attached to the skull, from which the flesh and skin have been removed, are within paragraph 511. (G. A. 5652, T. D. 25231, of 1904.) *Sliced deerhorn*, used as a medicine by the Chinese, is not within paragraph 511 but is dutiable as a medicinal preparation. (T. D. 36401, of 1916.) By reason of the change of its location in paragraph 589 of the act of 1909 and in paragraph 511 the word "unmanufactured" was held to qualify all the enumerations and not merely "horns and parts of," as in prior tariff acts. Under this construction *horn strips, polished*, with the ends rounded and drilled, are dutiable as manufactures of horn under paragraph 368. (T. D. 34535, of 1914.)

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UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPH 367 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

ASBESTOS

Paragraph 367:
Manufactures of.

Paragraph 406:
Unmanufactured.

REVISED EDITION

WASHINGTON
GOVERNMENT PRINTING OFFICE
1921

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UNITED STATES TARIFF COMMISSION.
Office: Eighth and E Streets NW., Washington, D. C.

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and index" the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Paul M. Tyler and Henry J. Bierman of the Metals Division of the Commission's staff, and of others.

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ASBESTOS, UNMANUFACTURED.

SUMMARY.

The amount of asbestos consumed by the United States annually exceeds the combined consumption of all other countries of the world, and of the total world output it produces only about 1 per cent, about 99 per cent of the total consumption being imported.

Known deposits of asbestos in the United States are entirely inadequate to supply domestic needs and, although efforts are being made by the Government to discover additional areas, it is probable that no very large deposits of the mineral exist in this country.

At present our chief source of supply is Canada, which supplies fully 95 per cent of the total annual imports. The bulk of the imports from Canada consist of "mill" fiber, and the rest "crude" fiber. Imports from other countries consist wholly of crude fiber, and come in largest quantity from southern Africa—Rhodesia and the Union of South Africa.

Canada produces about 85 per cent of the total world output and exports about 90 per cent of its total annual production to this country.

Canada has the world's largest known asbestos deposits and the quality of the mineral is unexcelled for most uses. The principal mines are conveniently located to the United States—just across the border in the Province of Quebec—and will probably continue to be the chief source of this country's future supplies.

Asbestos, unmanufactured—Summary table.

Calendar year.	Domestic production.	Imports for consumption.	Domestic exports.[1]	Ratio to production (per cent).		Value (imports for consumption).	Value per unit of quantity (short ton).
				Imports.	Exports.		
	Short tons.	*Short tons.*	*Short tons.*				
1910	3,693	59,235	922	1,603.98	24.97	$1,235,171	$20.85
1911	7,604	71,826	514	844.58	6.76	1,413,013	22.03
1912	4,403	71,562	395	1,525.30	8.97	1,455,983	22.79
1913	1,100	97,070	927	8,724.55	84.27	1,928,705	22.25
1914	1,247	71,866	122	5,663.11	9.78	1,407,754	21.94
1915	1,731	93,567	(2)	5,305.37	.....	1,981,484	23.72
1916	1,479	116,222	337	7,758.15	22.79	3,300,470	31.81
1917	1,683	134,108	245	7,868.39	14.56	4,521,172	37.76
1918	1,002	137,699	697	13,742.42	69.56	6,337,608	46.03
1919	1,361	135,270	1,119	9,580.02	79.18	7,369,685	54.48
1920	[3]1,710	167,558	615	9,798.71	35.97	9,120,253	54.43

[1] Fiscal year figures to 1917, inclusive. [2] None reported. [3] Estimated.

General Information.

TARIFF ACT OF 1913.

PAR. 406. Asbestos, unmanufactured. (Free.)

DESCRIPTION.

The term asbestos, as commonly used, includes half a dozen minerals all having a well-developed fibrous structure but differing in chemical composition and in some physical characteristics. The most important of these minerals commercially is *chrysotile*, or serpentine asbestos. About 95 per cent of the asbestos used in manufacturing is chrysotile and it commands a better price than the other fibrous minerals on the market. *Amphibole* asbestos is generally found in shorter fibers and its special use is in chemical laboratories and works where resistance to the action of acid is demanded. *Crocidolite*, or blue asbestos, is a special variety of amphibole asbestos differing from the others in appearance and in that it is more fusible, whereas an important property of other forms of asbestos is that they all resist even very high temperatures.

Uses.—The fundamental property of any asbestos mineral that distinguishes it from all other minerals is that it is separable into fibers similar in many respects to cotton, wool, and other articles of vegetable or animal origin. The use depends on the length and fineness of the fiber, on its resistance to the action of heat and chemicals, and on its insulating value as a nonconductor of heat and of electricity. The most important applications of asbestos are for brake linings, boiler and steam pipe coverings, building paper, electrical insulation, and in plaster and paints, and for most of these purposes chrysotile is superior to other varieties. A special use, for amphibole asbestos only, is in chemical laboratories and works.

Market grades.—"Unmanufactured" asbestos as it comes on the market has been separated from adhering rock and consists of fibers graded according to length. The longer fibers that can be picked out by hand are sold as "crude." *Crude asbestos* is divided into (1) a high class material with fibers over three-quarters of an inch long, used for the best grades of materials, and (2) fibers shorter than three-quarters inch but suitable for spinning and weaving. The remaining rock is sent to the mill and mechanically crushed and separated into three grades of "mill stock," according to the length of fiber. Mill stock is rarely suitable for weaving but can be made into pipe coverings, insulating materials, shingles, lumber, paper, and other articles.

In addition to these is "asbestic," which consists merely of roughly ground serpentine residues, about like very coarse sand or of very finely ground asbestos, commonly called "floats." It is suitable for the manufacture of plaster cement, fireproof brick, and similar articles.

Domestic Production.

The marketed production of asbestos in the United States in 1919 was 1,361 short tons, valued at $251,265, an increase of 359 tons over the production in 1918, but an amount somewhat smaller than the annual production during the three years preceding 1918.

Equipment and organization.—No large capital is required for the mining and treatment of asbestos as it is produced in the United

States, and it is doubtful if many deposits would justify large investments. This condition is different from that of Canada and certain other foreign producing countries where large deposits have led to the investment of moderate amounts of capital in machinery for mining and handling the rock, and more or less extensive treatment plants for preparing the fiber.

Geographical distribution.—Asbestos is mined in the United States chiefly in five States—Arizona, California, Georgia, Maryland, and Oregon. Georgia has for many years been the largest producer of asbestos in the United States, although the more important product has come from Arizona. The latter is high grade, containing a large proportion of spinning fiber, and the second-class fiber, because of its freedom from iron, is superior for electrical and some other purposes to most of the asbestos found in other countries. The Georgia fiber is valuable only for paints, cements, coverings, and similar articles, and can not be used in spinning.

Arizona.—Production of asbestos in Arizona began in 1915 and it was not until 1916 that the output became considerable. There were five producers by the end of 1918. The principal production was at Ash Creek, near Salt River, about 40 miles northeast of Globe, but mining has progressed northward beyond Salt River in the Sierra Ancha. The first discovery of asbestos in Arizona was in the Grand Canyon, but the depth was so great as to make exploitation and transportation to the railroad a matter of considerable difficulty. Thus far no industry has developed in that region.

Two grades are produced. One is a fine, soft, silky fiber of first-class textile quality; the other is harsh fiber, unsuited to making textiles. It yields a great deal of "splint" that makes a rough-looking yarn very unsatisfactory for most textile purposes. Both grades are found in the same mine, the lower grade being invariably more abundant. The unusually small percentage of iron in the Arizona asbestos makes it superior to Canadian fiber for electrical insulation.

The limits of the Arizona asbestos field have not been defined. The output will never be large compared to that of Canada, but under proper management should be approximately 1,000 tons a year of valuable fiber for years to come.[1]

California.—The Klamath Mountains, the Coast Range, and the Sierra Nevadas are rich in serpentine and in places the rock contains considerable asbestos. In 1918 the principal production was in Nevada County. No production of crude fiber was reported, but several grades of mill fiber were produced and used in making flooring, stucco work, straw-pipe covering, and asbestos cement.

In 1918 there was a small output of asbestos in Calaveras and Alameda Counties, and operations which showed fine crude fiber were reported in Fresno County. Prospects were also opened in several other counties, but the fiber is too short for spinning, and, although some crude occurs which is 1¼ inches long, profitable development is for the most part not expected.

Georgia.—For several years a mine near Sall Mountain has been the largest producer of asbestos in the United States. The mill is located at Gainesville. The asbestos is of the massive type of anthophyllite. Fibrous bundles constitute the whole mass of the rock. Only the surface portion, where the rock has been softened by

[1] J. S. Diller. Mineral Resources, U. S. Geol. Survey, 1916, Part II, p. 20.

weathering, is milled. The solid portion of the rock is too hard for milling. In the absence of some way being found to treat this unweathered material successfully the supply will be greatly restricted. However, in Georgia there seems to be a fairly good supply available of weather-softened rock for the near future. The product is used largely in the manufacture of paints, fireproof cements, and other articles in which short fibers can be used.

Wyoming.—The asbestos deposits of Natrona and Fremont Counties have attracted much attention, but have thus far yielded only a small quantity of commercial asbestos. In the report of the United States Geological Survey for 1917 attention is called to the deposit owned by the American Fireproofing & Mining Co. about 28 miles south of Lander. A small quantity of spinning fiber obtained there was manufactured into yarn and wicking. The mine was practically closed in 1918, and the small supply of asbestos on hand is reported to have been kept in storage unsold.

Oregon.—One asbestos mine in Oregon operated for a short time in 1918. The output was reported small and of three grades of material. The lowest grade, which embraced the largest quantity, was asbestic.

Other States in which deposits of asbestos occur are Vermont, Idaho, and Virginia. The mineral is not mined in Vermont and only rarely and in small quantities in the two other States.

Methods of production—Mining.—The large mines of Quebec are worked almost exclusively open-cast. The operation is quite similar to any quarry operation on a large scale. The ore is broken in benches—drilling either by hand or by machine—and loaded into boxes, which are hoisted out of the pit by cable or boom derricks. Occasionally the quarry floor is connected with the hoisting plant by an inclined shaft or tunnel, and the rock is run out in cars or skips. This is a recent innovation, sometimes coupled with the introduction of steam shovels for loading the cars. Rarely underground mining is resorted to, especially for the purpose of avoiding delays in bad weather. The methods do not differ from those applicable to deposits of other rock or ore.

Milling—Cobbing.—A certain amount of hand sorting is done in the quarry, and barren material is, so far as possible, left unbroken or, if necessary to break, may sometimes be left on the quarry floor and not hoisted. It is always kept separate from the productive material. When rock is sufficiently high grade, it is sent to a cobbing house, where it is broken and screened for the removal of crude fiber. This is done by hand. Both men and women are generally employed in the Canadian mills for this work.

Drying.—The rejected rock from the cobbing house, together with all the milling rock from the quarry, is sent to the mill, where it receives a preliminary rough breaking. Since the material carries a large amount of moisture as it comes from the quarry, it must first be dried. This is generally done in rotary driers of typical design, in which the hot gases from a fire box pass over the drying rock in a slowly revolving steel cylinder. These cylinders are sometimes fitted with perforated ends and act as trommels, separating the coarse rock that requires further reduction.

Crushing.—The dried ore is broken in coarse crushers of the jaw or gyratory type to about 1½ inches maximum diameter. It then passes to rolls, which reduce it in one or more stages to a size suitable for the fiberizer—usually about one-half inch.

Fiberizing.—All the breaking and crushing to this point in the manufacture has been merely for the purpose of liberating the fiber from the rock. In order to make the rock more amenable to the final extraction of the fiber, it is necessary that the coarse fiber or stone asbestos, which for the most part leaves the above machines in the form of small lumps, be divided and split into fine, cottony fiber. This operation is done in a "fiberizer"—either a cylindrical beater or a "cyclone." The former consists of a cylindrical shell in which chilled iron beaters revolve. These strike the rock particles against the outer shell. The repeated blows either reduce the rock to fine grains or fiberize it. The material is gradually driven from one end of the beater to the other, because the faces of the beaters are set at a slight angle. The beater blades run about 300 revolutions per minute.

The Cyclone machine is now used in almost every asbestos mill and is the most important step in the whole separation. It consists essentially of two beaters of the screw-propeller type, driven at a high speed (2,000 to 2,500 revolutions per minute), usually in opposite directions, and inclosed in a cast-iron chamber. The rock is fed just above the beaters. The whirlwind created by the beater hurls the particles against each other and the sides of the chamber with such rapidity and force that the reduction of the material to grains or even impalpable powder takes place almost instantly. All material smaller than peanut size is thrown out of the chamber and generally falls first on a shaking screen placed in an air-tight box connected with a suction fan, which assists in the discharge of the cyclone and removes part of the fiber. The beaters wear out rapidly and must be replaced every 10 to 14 days. The capacity per 10-hour shift varies from 20 to 30 tons of hard, tough rock to 50 to 60 tons of softer material. As a rule, the size of rock charged is not larger than a walnut. Coarser material cuts down the capacity as well as increases the wear on the blades. The maximum size of sand discharged runs from one-sixteenth to one-eighth inch.

Occasionally the fiberizing is done in two or more stages; usually a cylindrical beater as the first machine is followed by one or more "cyclones." Between each pair of machines fiber is drawn out by a suction fan; fine sand (usually one-sixteenth inch and less) is screened out and the material oversize elevated to the next machine for re-treatment. The sand or undersized screening is tailing that either goes to waste or is ground finer and sold as "asbestic" for plaster, etc. The action of the suction fans is similar to the winnowing of chaff from grain, except that the light material in this instance is saved.

Grading of fiber.—The final stage in the milling process is the treatment of the fiber extracted from the rock. All of this goes to collectors. From them it passes through a revolving screen having arms inside that revolve in opposite directions in order to separate the different lengths of fiber. Two grades are made, which are treated separately in two shaking screens, which effects partial separation of the sand adhering to the fiber. The fiber on these screens is sucked into collectors. The longer fiber is screened again in a trommel. The oversize constitutes fiber No. 1. The undersize, after being again treated on a shaking screen to remove the sand, is drawn back again into the same collector.

The material from the first screening goes through the same process as the second and a third and fourth if more grades.

History.—Asbestos was used commercially in ancient times. Its discovery is attributed to the Romans who obtained their supplies from the Italian Alps and Crete. The Alpine variety was known as "amianthus," from a Greek word meaning "unpolluted." Asbestos mattress at Carcassonne, in the south of France on the eastern coast of Greece, and in Cyprus was used in weeks for the perpetual burning lamps of the temples and wicks and napkins that could be cleansed by fire. Amianthus cloth was also used in cremations, mourners that were wrapped after bodies placed in the funeral pyre to retain the ashes of the dead.

Through the Middle Ages asbestos was rarely mentioned and was probably practically forgotten in Europe. Marco Polo states that while traveling through Siberia in the thirteenth century he was shown cloth made from amianthus which was cleansed by the action of fire.

Asbestos was rediscovered in the Urals in 1720, and a factory for its manufacture was built 40 years later. Interest in the mineral was again revived in Europe in 1860 when a London syndicate made the first modern attempts to exploit asbestos deposits. Mining operations began in Quebec in 1878 and the arrival of shipments of the latter grade mineral in London created a sensation. From then on development was very rapid until 1900, when it suffered a serious setback by overproduction and fall in price. The latter resulted in the adoption of mechanical means for separating the fiber. Before 1914 very little asbestos was produced in Rhodesia and commercial production did not begin in the South African field until about 1916.

In the United States asbestos has been mined for nearly one-half century, but it was not until about 1908 that deposits of this mineral yielding fiber of good spinning quality was discovered in Arizona. Production from the Arizona deposits has only been on a small scale and has met the requirements for a small part of the total spinning fiber consumed in this country. These deposits are now (1920) being investigated by the Geological Survey in order to ascertain the possibility of their supplying the needs of the country.

Domestic production and consumption.—In the calendar year 1919 the production of asbestos in the United States was 1,561 short tons, valued at $151,241. By adding to the quantity produced the amounts for unreported sales and deducting the quantity exported (1,222 tons), an approximate consumption of 1,350 tons is arrived at for the year 1919. It is evident, therefore, that the domestic production in this country is only a very small part of the amount annually consumed.

That the domestic output of asbestos is less than the total annual consumption is due largely to the general low average grade of the domestic mineral, the bulk of which is suitable only for making pipe coverings and cement or for paint, and because supplies of spinning fiber can be obtained from the Canadian mines at prices equally as low as those asked for the American mineral.

Imports and exports.—Specific imports of domestic asbestos are made nearly every year in small amounts.

In the calendar year 1919 the total exports amounted to 999 short tons, nearly one-half of which was sent to Italy. Slightly more

than one-fifth to England, and much smaller proportions to Canada, Germany, France, and a few other countries.

The amount exported has never been very important. It is probable that a large part is made up of amphibole fiber for chemical uses, since the United States is the chief producer of this asbestos mineral, and some short fiber for use in the manufacture of pulp products.

FOREIGN PRODUCTION.

Canada produces over 85 per cent of the world's total supply of asbestos. In normal times Russia is the second largest in order of production. During the last few years South Africa, including Rhodesia and the Union of South Africa, has produced increasing amounts annually, exceeding, it is believed, the output of Russia since 1916.

Canada.—The principal asbestos deposits of Canada are located in the Province of Quebec and occur in a long series of basic intrusive rocks, usually referred to as the "serpentine belt." This belt starts in the United States and enters Canada at the boundary line between Vermont and the Province of Quebec. From the international boundary line the general trend of the serpentine belt can be traced in an almost continuous development of rocks, presenting a narrow zone over 170 miles long. Then comes a gap of about 130 miles followed by another development of serpentine rocks. The asbestos-bearing rock of the serpentine belt may be roughly divided into five separate fields or areas, each one of which possesses distinctive features. Chief among these is the Thetford-Black Lake field, by far the most important asbestos producing area in the world. Practically the whole of the Canadian long fiber, hand cobbed asbestos (designated as "crude" asbestos), as well as about 70 per cent of the "mill stock," comes from these deposits. The belt of serpentine rocks is here traceable over a distance of 12 miles, while its greatest width is about 3 miles. The Quebec Central Railway crosses the deposits, and most of the mines are located within a few hundred feet on either side of the track. This railway connects both the Broughton field (which produces mostly short fiber) and the Thetford-Black Lake field, with the city of Quebec at its northern terminus, where ocean transportation can be had for nearly eight months of the year, and with Sherbrooke at the southern terminus, where it connects with the system of American railways, by the Boston & Maine Railroad, the Maine Central Railway, and the Grand Trunk.

The formation of the Quebec asbestos deposits are such as to indicate beyond reasonable doubt that the deposits continue in depth, without changes in their nature, perhaps beyond the level of economic mining. At all events the work of exploitation and development carried out in the mines at Thetford and Black Lake appears to bear this out, and there does not seem to be any cause to fear that through exhaustion of the serpentine, the deposits will give out in the near future.

At present the largest excavation in the asbestos field has reached the following dimensions: Length, 900 feet; width, 600 feet; and depth, 275 feet. At that depth there has been no change whatever in the nature of the ore, the percentage of asbestos, or in the quality, quantity, and length of the fiber. Moreover, in some of the pits

much greater depths have been reached in diamond-drill holes, and it may be stated that the asbestos-bearing serpentine extends to depths of over 500 feet below the surface.

Asbestos was discovered in Canada as early as 1847, but mining operations did not begin until 1878, in which year 50 short tons were produced in the Thetford field. The opening of other mines soon followed, with resulting rapidly increasing annual output until in 1914 the total production amounted to over [illegible] short tons.

Russia.—The principal Russian asbestos mines are situated in the serpentine areas of the Urals. There are also deposits of considerable extent in Siberia. Asbestos is known to occur in the Caucasus, but the mines are small and the fiber is of poor quality. The mineral is produced chiefly in the Urals. The asbestos is harsher than Canadian asbestos and for this reason, in spinning the fiber is commonly used in connection with Canadian fiber, though it is possible to spin it alone. Authentic statistics of Russian production have not been available since the revolution early in 1917.

Southern Africa.—One of the factors in the development of South African production is the improvement in transportation facilities. Prior to 1914 very little asbestos was produced in Rhodesia, but in that year a railroad was built to Victoria after which the annual production increased greatly. In fact the output in 1915 was over four times as large and in 1916 over twelve times as large as in 1914. The progress in southern Africa is still hampered, however, by slow and expensive transportation of asbestos from mining districts and also by the lack of capital, since asbestos is but little known or understood by African capitalists, who are more interested in the gold, diamond, coal and copper fields. However, responsible parties representing various producers in England, America, Japan, and Australia are reported interested in the South African fields. The [illegible] to assist small producers by frequently [illegible] conditions, requirements and market prices and [illegible] a system of cooperation whereby it is hoped to secure [illegible] grading, and selling prices. Local [illegible] are actively promoting the development [illegible] One notable instance was the formation of the [illegible] which is expected ultimately to [illegible] relation to the entire crocidolite [illegible] and amphibole asbestos occur [illegible] southern Rhodesia. Up to 1916 [illegible] from the Victoria district, [illegible] an important producer. [illegible] In 1920 the Victoria [illegible] three mines each. The [illegible] is about 2½ miles long. [illegible] occurs in a zone [illegible] and the workable deposits are [illegible] are developed in open- [illegible] have been erected at [illegible] mineral. The fibers vary [illegible] and are separated into three [illegible] The fibers are flexible, [illegible]

[illegible]

The output of asbestos in Rhodesia shows remarkable advances in production in 1920, the total output for the first six months being 7,168 tons, or nearly as large as the entire 1918 production. Practically the entire output is of spinning grades.

The Union of South Africa contains asbestos deposits of large size, and the mineral mined consists chiefly of crocidolite (blue asbestos) and amosite (which in many respects closely resembles crocidolite), but chrysotile is also worked.

Amosite is the name given in 1918 to a monoclinic ferrous amphibole by the "Asbestos Mines of South Africa," the company chiefly interested in its production. The fiber-bearing rocks occur in the Transvaal and cover an area 60 miles in length and 6 miles in width. Commercial production began about 1916. Amosite is the principal variety mined in the Transvaal, though chrysotile, crocidolite, and tremolite are also mined to a smaller extent.

In the Cape Colony field crocidolite is the only variety of asbestos worked. The fiber is usually lavender blue, but color variations are not uncommon, being in some cases pale yellow or rusty brown. Such discolored fibers are harsh to the touch, and command only a limited sale. Fully three-fourths of the total production of the Union of South Africa from 1915 to 1919 came from the Cape Province.

IMPORTS.

In the calendar year 1920 the imports of unmanufactured asbestos was 167,558 short tons, valued at $9,120,253, having increased to this amount from 59,235 tons in 1910 by almost unbroken annual increases.

Fully 95 per cent of all the asbestos imported into the United States comes from Canada and represents over 90 per cent of the total production of that country. Imports from other countries have been mostly sporadic, and it was not until 1917 that the mineral began to come from southern Africa with any indication of stability in the movement. The regular annual importations of South African asbestos since that year are due largely to the Cape Asbestos Co., credited with producing 80 per cent of the entire output of African blue asbestos (crocidolite). This company prepared its product in a way which eliminated difficulties formerly encountered by American manufacturers in spinning the fiber.

Imported Canadian asbestos includes a large percentage of "mill stock," whereas imports of South African material consists wholly of "crudes."

PRICES.

The various grades of asbestos have never been standardized, and this is a source of great inconvenience to the buyers, as purchases have to be made on samples submitted. Each producer has his own method of grading, and his own special mark or designation for rock grade. There is, however, a uniform method of testing the length of fiber of the "mill stock" qualities, and some of the large users of asbestos have their own representatives at the mines to examine and test each shipment as it is made.

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The grading is based on (1) the life of the fiber, which depends on the strength and resiliency of the threads; (2) the length of the fiber; and (3) on the color of the fiberized material.

For the purposes of statistics, the Quebec Bureau of Mines has adopted a classification based on the selling price of asbestos which divides it into two grades of "crude" or hand-cobbed material, and three grades of "mill stock," or fiber recovered by mechanical means after crushing and pulverizing the rock.

In 1915 Canadian fiber of a well-known grade was bought at $50 to $60 a ton; in 1916, at $100; in 1917, at $200; in 1918, at $250; in 1919, at $300. In 1920 the price asked was from $400 to $525.

The best grade of Canadian spinning fiber in 1917 ranged from $700 to $1,500 a ton; in 1918, at from $1,200 to $2,000 a ton. At the close of 1920 the best grade was selling as high as $3,500 a ton.

TARIFF HISTORY.

Asbestos was specifically mentioned for the first time in the tariff act of 1864, which imposed a duty of 25 per centum ad valorem. The duty was removed by the act of 1870, and since that year unmanufactured asbestos has been on the free list. Unmanufactured asbestos was adjudged to include fiber separated from the containing rock.

COMPETITIVE CONDITIONS.

The United States is the largest consumer of asbestos in the world and manufactures more asbestos products than any other country; but it has never been, and shows no promise of ever becoming, an important factor in the production of the unmanufactured product. Its meager output could be increased to some extent but it will probably never become great enough to supply the domestic demand. The United States must, therefore, rely largely upon imported crude material.

The chief source of asbestos is in Canada, just outside the borders of this country. The supply from Quebec is large, cheaply mined, excellent in quality, and so readily available that there is little stimulus to domestic production of medium grades of average quality from the less favored American deposits. As the only producer of both long and short fibers, Canada holds the leading position in the world markets.

Formerly American production consisted almost exclusively of the cheapest material, suitable only for paint making or other purposes requiring only very short fiber. There was also some production of extremely poor rock for local requirements and too low in value to bear transportation charges. This demand has fallen off but has not wholly disappeared. The brightest outlook for domestic production is in the Arizona output of exceptionally good spinning fiber and of special quality, superior for electrical purposes. A less important demand is met by the production of asbestos fiber, for use in filters and chemical work, from amphibole deposits found in the crystalline rocks of Maryland.

The continuance of the Arizona industry is assured. Although the cost of production will always be much greater than in Canada because of the nature of the deposits, the proportion of valuable spin-

ning fiber is greater while the iron content is lower. There is a demand for this special product even at a higher price. Owing to the fact that in practically all the Arizona fiber the harsh and soft material are so intermingled that it is difficult to separate them, these fibers do not bring as high prices as the Canadian. In 1918 soft Arizona fiber was selling at $850 to $1,250 a ton, according to its length, and the harsh Arizona fiber at $350 to $600 a ton. The shorter fibers, or mill rock, have about the same value as the Canadian shorter fibers. An increase in the Arizona output may be looked for but it is not likely greatly to exceed 1,000 tons a year, which is not 1 per cent of American needs on a purely tonnage basis.

The Georgia production also supplies a special demand, and may be expected to continue. The costs are low but the grade of material is poor.

Asbestos, unmanufactured—Production in United States.

[From Federal census. Product mined.]

Year.	Short tons.	Value.
1902	2,505	$46,200
1909	(1)	65,140

[1] Not available.

[From Mineral Resources, Part 2, U. S. Geological Survey. Product marketed.]

Year.	Short tons.	Value.	Year.	Short tons.	Value.
1900	1,054	$16,310	1911	7,604	$119,935
1901	747	13,498	1912	4,403	87,959
1902	1,005	16,200	1913	1,100	11,000
1903	887	16,760	1914	1,247	18,965
1904	1,480	25,740	1915	1,731	76,952
1905	3,109	42,975	1916	1,479	448,214
1906	1,695	28,565	1917	1,683	506,056
1907	653	11,899	1918	1,002	124,687
1908	936	19,624	1919	1,361	251,265
1909	3,085	62,603	1920 [2]	1,710	1,154,000
1910	3,693	68,357			

[2] Estimated.

Asbestos, unmanufactured—Production in principal foreign countries, in short tons.

Countries.	1910 [1]	1911 [1]	1912 [1]	1913 [2]	1914 [2]	1915 [2]
Canada	77,508	101,393	111,561	136,951	96,542	111,142
Canada [3]	24,707	26,021	24,740	24,135	21,031	25,700
Russia	13,467	17,124	18,138	19,284	17,297	[4] 10,780
Cape Colony	1,403	1,253	1,217	(5)	(5)	(5)
Natal	3	13	3	[6] 962	[6] 1,191	[6] 2,139
Rhodesia	332	460	1,234	290	487	2,010
Transvaal	77	.....	(5)	(5)	(5)	(5)
Cyprus	487	799	860	(5)	(5)	(5)
India	3	.....	(5)	(5)	(5)	(5)
Italy	193	184	186	193	189	179
Total	118,180	147,247	157,939	181,815	136,737	151,950

[1] Figures from Mineral Industry.
[2] Figures from Mineral Resources of the United States in 1919. (Preliminary Report).
[3] Asbestic.
[4] Estimated.
[5] Statistics not available.
[6] Union of South Africa.

Asbestos, unmanufactured—Production in principal foreign countries, in short tons—Con.

[Mineral Resources of the United States in 1919.]

Countries.	1916	1917	1918	1919[7]
Canada	133,439	135,502	141,465	153,069
Russia	[4] 9,030	.....	[4] 6,614	.....
Union of South Africa	4,656	6,219	3,674	3,933
Rhodesia	6,158	9,563	8,574	9,740
Australia	[5]	[5]	[5]	2,005
Cyprus	[5]	[5]	[5]	[8] 1,491
India	[5]	[5]	[5]	435
Italy	90	94	[4] 88	.....
Total	153,373	151,378	160,415	.....

[4] Estimated.
[5] Statistics not available.
[7] From "The Mineral Industry of the British Empire and Foreign Countries."
[8] Exports.

Asbestos, unmanufactured—Imports by countries.

FISCAL YEARS.

Imported from—	1910		1911		1912	
	Long tons.	Value.	Long tons.	Value.	Long tons.	Value.
Belgium	.....	.....	.....	.....	5	$147
Germany	43	$3,484	123	$12,616	12	2,069
Italy	6	1,307	1	177	1	18
Russia in Europe	92	20,121	50	10,928	94	8,998
United Kingdom	47	10,075	.....	16	.....	10
Canada	47,322	1,087,098	56,950	1,294,802	60,429	1,367,279
Total	47,510	1,122,085	57,124	1,318,539	60,541	1,378,521

Imported from—	1913		1914		1915	
	Long tons.	Value.	Long tons.	Value.	Long tons.	Value.
Germany	33	$6,841	11	$1,790	2	$1,302
Italy	9	1,594	2	651	.....	.....
Russia in Europe	101	17,033	146	24,844	15	2,895
United Kingdom	4	2,046	.....	.....	.....	.....
Canada	76,790	1,733,360	76,365	1,651,471	68,069	1,509,433
Total	76,937	1,760,874	76,524	1,678,736	68,086	1,513,630

Imported from—	1916		1917		1918	
	Long tons.	Value.	Long tons.	Value.	Long tons.	Value.
United Kingdom	100	$21,512	1,112	$262,982	9	$4,385
Canada	98,870	2,603,491	114,050	3,612,228	113,063	5,017,091
British South Africa	.....	.....	509	55,951	1,885	190,275
Portuguese Africa	.....	.....	47	13,662	2,225	171,823
All other	.....	.....	.....	.....	1	1,138
Total	98,970	2,625,003	115,718	3,944,823	117,183	5,384,712

CALENDAR YEARS.

Imported from—	1918		1919		1920	
	Long tons.	Value.	Long tons.	Value.	Long tons.	Value.
France	.....	.....	402	$204,412	.....	.....
England	.....	.....	139	53,057	666	$236,361
Canada	120,369	$6,207,845	119,341	6,935,804	145,283	7,690,165
Colombia	1	1,138	.....	.....	.....	.....
British South Africa	747	82,217	804	132,465	1,994	403,950
Portuguese Africa	1,829	46,385	89	43,791	1,414	722,197
All other	.....	.....	2	156	248	67,580
Total	122,946	6,337,585	120,777	7,369,685	149,605	9,120,253

Asbestos, unmanufactured—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Tons.				*Per cent.*
1907	Free	45,544	$1,014,148		$22.27	
1908	do	42,281	1,115,799		26.39	
1909	do	54,817	1,021,413		18.63	
1910	do	47,408	1,122,084		23.67	
1911	do	57,210	1,317,850		23.04	
1912	do	62,275	1,378,082		22.14	
1913	do	76,952	1,760,845		22.88	
1914	do	76,458	1,678,732		21.96	
1915	do	68,087	1,513,031		22.23	
1916	do	98,970	2,625,003		26.52	
1917	do	115,772	3,944,823		34.07	
1918	do	117,183	5,384,735		45.95	
Calendar years:						
1918	do	122,946	6,337,608		51.55	
1919	do	120,777	7,369,685		61.02	
1920	do	149,605	9,120,253		60.96	

Asbestos, ore and unmanufactured—Domestic exports.

FISCAL YEARS.

Exported to—	1910		1911		1912	
	Long tons.	Value.	Long tons.	Value.	Long tons.	Value.
United Kingdom	437	$8,852	42	$1,012		
Germany	80	3,216	211	8,435	243	$12,850
Netherlands			58	2,570	76	2,935
France	91	1,744				
All other	215	5,320	148	4,134	34	806
Total	823	19,132	459	16,151	353	16,591

Exported to—	1913		1914		1915 [1]	
	Long tons.	Value.	Long tons.	Value.	Long tons.	Value.
United Kingdom	78	$3,121	20	$250		
Germany	694	23,430	67	3,600		
Netherlands	56	1,808	22	1,200		
Total	828	28,359	109	5,050		

Exported to—	1916		1917		1918	
	Long tons.	Value.	Long tons.	Value.	Long tons.	Value.
United Kingdom	19	$320			110	$1,650
Netherlands	158	3,150				
France	93	3,600	198	$19,433	95	11,100
Canada	4	67	1	110	141	56,325
Japan					160	23,132
All other	27	1,684	20	2,308	261	25,206
Total	301	8,821	219	21,851	767	117,413

[1] None reported.

Asbestos, ore and unmanufactured—Domestic exports—Continued.

CALENDAR YEARS.

Exported to—	1918		1919		1920	
	Long tons.	Value.	Long tons.	Value.	Long tons.	Value.
United Kingdom	110	$1,650	219	$6,642	10	$2,006
Germany			23	8,615	82	27,250
Netherlands			1	90	60	4,480
France	45	9,450	20	20,000	115	4,716
Canada	139	9,772	34	2,738	138	3,885
Italy	327	30,106	494	107,817	96	71,738
Japan			30	3,000	5	23,181
All other	1	75	178	8,514	43	3,815
Total	622	51,053	999	157,416	549	141,071

Asbestos, unmanufactured—Prices per short ton—Sales price of Canadian asbestos, f. o. b. mill.

[From Mineral Resources, U. S. Geological Survey.]

Kinds or grades.	1910	1911	1912	1913	1914	1915 [1]	1919 [2]
Crude No. 1	$263.70	$263.45	$263.31	$286.62	$301.23	$274.11	$1,256.74
Crude No. 2	99.12	112.86	101.49	120.29	131.87	122.39	618.77
Mill stock No. 1	54.69	50.05	44.97	46.95	48.12	52.40	222.15
Mill stock No. 2	23.42	20.95	19.74	19.97	20.15	19.99	53.02
Mill stock No. 3	8.47	8.85	9.79	9.14	8.83	7.46	19.40
Total asbestos	32.49	28.96	27.79	27.97	29.96	30.87	80.47
Asbestic	.71	.81	.80	.79	.83	.85	2.64

[1] Figures 1916 to 1918 are not available.
[2] Preliminary statement, Department of Colonization, Mines, and Fisheries, Province of Quebec.

Asbestos, unmanufactured—New York prices per short ton for Canadian chrysotile fiber.

[From Mineral Resources, U. S. Geological Survey.]

Kinds or grades.	1912	1913	1914	1915	1916	1917	1918
No. 1 crude	$300–$325	$320–$350	$350–$375	$350–$400	$350–$1,250	$700–$1,500	$1,200–$2,000
No. 2 crude	175–200	200–225	225–250	225– 275	250– 900	500– 900	700– 1,200
No. 1 fiber		100–125	100–125	110– 150	150– 350	150– 450	400– 600
No. 2 fiber		75–100	75–100	80– 125	75– 150	75– 150	250– 300
Shorter fibers		10– 30	10– 30	10– 30	15– 60	18– 75	18– 125

Court and Treasury Decisions.

Asbestos fiber with a slight admixture of gray rock was held exempt from duty as asbestos unmanufactured, and not dutiable as a manufacture of asbestos under the act of 1890. G. A. 819, T. D. 11828.

Carded asbestos fiber consisting of amphibole asbestos in fibrous form, white in color, and used in part by chemists for filtering acids, was likewise held exempt from duty as unmanufactured rather than as a manufacture of asbestos under the act of 1894. G. A. 3369, T. D. 16850.

Asbestos fiber, invoiced as "asbestic finish," which had been separated from asbestos rock by mechanical means and containing portions of the nonfibrous rock, was held free of duty as asbestos unmanufactured rather than dutiable as a manufacture of asbestos under the act of 1897. This importation was found to consist of the

shortest asbestos fibers and not to be asbestos sponge or any form of asbestos cement. G. A. 4903, T. D. 22937.

Asbestos subjected to a process called first carding, whereby a portion of the impurities was removed, but which had to undergo two additional carding processes before the fiber was ready to be spun as carded asbestos, was held exempt from duty as asbestos unmanufactured under the act of 1909 and not dutiable as a manufacture of asbestos. Abstract 32612, T. D. 33511 (1913).

An importation invoiced as "asbestos finish," consisting of the shortest fibers of asbestos screenings, or refuse obtained in eliminating the longer asbestos fibers from the rock, and used in the manufacture of paper and cement as a filler, was held exempt from duty as asbestos unmanufactured and not dutiable as a manufacture of asbestos under the act of 1913. Abstract 41761. A later importation invoiced as "asbestos finish," "asbestos sand finish," and "asbestos ex. finish," and found to be a finely powdered by-product or refuse of comparatively little value, was likewise held exempt from duty as asbestos unmanufactured under that act. Abstract 42733.

Asbestos, unmanufactured—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	598	Asbestos, unmanufactured	Free.
1890	494	.....do	Do.
1894	388	.....do	Do.
1897	484	.....do	Do.
1909	501	.....do	Do.
1913	406	.....do	Do.

MANUFACTURES OF ASBESTOS.

General Summary.

The rapidly growing demand during recent years, both here and abroad, for finished asbestos products has occasioned largely increased domestic production, which reached its highest level during the European War (1914–1918), when larger production was limited only by the inability of manufacturers to secure larger supplies of raw asbestos fiber. The keen domestic demand for textiles continued after the war and, as a result of the increased production and the prices prevailing, the American industry prospered greatly.

In 1919 there were 17 factories, or textile mills, in the United States engaged in the conversion of raw asbestos into finished yarns, cloths, tapes, tubings, etc. In addition to this group of manufacturers, and taking a majority of the output of the 17 factories, is another group of finishers who convert the product as it comes from the textile mills into finished articles, packings, brake linings, etc. Of the latter group there are 23 factories of importance, all located in the eastern section of the United States.

Fifteen of the textile plants are located in States bordering on the Atlantic seaboard, and one each in Indiana, Ohio, and California. Their combined capital is estimated at $15,000,000, and the value of their annual production at $35,000,000. Capital invested in the manufacture of packings, brake linings, etc., is estimated roughly at $25,000,000. The total domestic production of all classes of asbestos textiles—taking into account, in addition to the output of textile mills, the output of manufacturers using the products of asbestos textile mills as their raw material—is estimated at from $60,000,000 to $70,000,000.

The importance of the industry lies in the resistant qualities of asbestos, the component material used, which render it suitable for use where fire, oil, or acid resisting properties are essential. The finished product finds its greatest use in connection with machinery, and no substitute of equal service is known.

The importation of asbestos textiles and allied products is comparatively small and in the past has been rather supplementary to domestic production. Prior to 1914 imports came chiefly from Great Britain, Germany, and Austria. During the European War (1914–1918) Germany and Austria ceased to be factors in the American market, and since then Great Britain has practically been the only country exporting asbestos textile products to this country.

Whereas a few manufacturers of asbestos textile products also make some or all of the heavier asbestos products, such as shingles, slates, wood or lumber, paper, millboard, pipe and boiler coverings, the making of these products is generally confined to other groups of manufacturers, of which there are over 50 in the United States.

Heavy asbestos articles of foreign manufacture are sold in the United States to a small extent only, and the imports of these products come almost wholly from one factory in Canada. Products of European manufacture are practically shut off from competing in the American market by reason of transportation costs.

The United States is the world's largest producer and consumer of asbestos manufactures. The total annual domestic production of asbestos textiles and manufactured textile products alone is estimated at from $60,000,000 to $70,000,000. This does not include the heavy asbestos products, such as shingles, slates, wood or lumber, paper and millboards, and pipe and boiler coverings, the production of which amounts to several million dollars annually. Much larger amounts are exported annually than are imported. In the calendar year 1919 the total exports of all kinds of asbestos manufactures were nearly 10 times as large as the imports. According to the manufacturers, however, the exports consist mainly of corrugated paper and shingles, whereas the imports are chiefly textiles, especially yarn and cloth or tapes. An important quantity of asbestos brake and clutch linings are included in the exports of American automobiles.

Import statistics for manufactures of asbestos are compiled by United States customs officials according to the three classifications given in paragraph 367 of the tariff act of 1913, viz, asbestos yarn, woven fabrics, and all other. Exports are all compiled together under one head, "Asbestos, manufactures of."

There being practically five classes of these articles which, in process of manufacture and in resulting product, are distinctly different, separate discussion is given each in the following pages under the heads of: (1) Asbestos textiles; (2) asbestos packings; (3) asbestos papers and millboards; (4) asbestos and composition pipe and coverings, including 85 per cent magnesia coverings; and (5) asbestos shingles, slates, wood or lumber.

Manufactures of asbestos (total)—Summary table—Values.

	Imports for consumption.	Domestic exports.	Amount of duty.	Equivalent ad valorem rate.
Fiscal years:				*Per cent.*
1910	$265,185	$293,616	$80,087	30.20
1911	291,054	388,833	85,312	29.31
1912	338,180	520,894	98,861	29.23
1913	381,879	688,414	109,651	28.71
1914	398,159	687,073	64,294	16.15
1915	232,569	535,027	26,832	11.54
1916	171,998	1,019,083	19,717	11.46
1917	69,439	1,502,437	9,264	13.34
1918	37,220	2,112,721	4,513	12.13
Calendar years:				
1919	257,381	3,531,978	44,520	17.30
1920	618,450	4,431,132	109,737	17.74

Manufactures of asbestos—Imports by countries (fiscal years).

Imported from—	1910	1911	1912	1913	1914	1915
Austria-Hungary	$58,148	$62,290	$70,959	$85,347	$62,255	$25,732
Belgium	7,565	15,019	17,266	25,949	30,115	5,496
Denmark		45				5,033
France	1,310	2,225	439	3,289	4,380	638
Germany	76,459	72,192	74,933	90,434	102,158	61,273
Italy	3,885	7,995	7,472	6,176	8,615	4,842
Netherlands	194	247		119		190
Switzerland			13	9	31	
England	121,355	131,899	164,641	181,729	167,031	114,241
Scotland	120	1,214	234	1,603	1,160	1,358
Ireland						236
Canada	118	525	654	407	15,592	11,541
Mexico	7					130
Japan			22	215		
Philippine Islands			11			
All other			7			
Total	269,161	293,651	336,701	395,277	391,337	230,710

Imported from—	1916	1917	1918	1919	1919 [1]
France	$651	$13,502	$5,354	$22,376	$24,939
Germany	437				10
Italy	1,442	5,259	516		2,989
England	164,548	40,674	23,504	67,161	211,957
Scotland	335	296		835	298
Ireland			451		
Canada	1,908	8,380	9,998	16,977	17,188
Cuba	538		174	64	
Colombia	109				
Japan	298		80		
Total	170,266	68,111	40,077	107,413	257,381

[1] Figures are for calendar year.

Manufactures of asbestos (total)—Imports for consumption—Revenue.

	Values.	Duties collected.	Actual and computed ad valorem rate.		Values.	Duties collected.	Actual and computed ad valorem rate.
Fiscal years:			*Per cent.*	Fiscal years—Con.			*Per cent.*
1907	$148,920	$37,230	25.00	1915	$232,569	$26,832	11.54
1908	154,444	38,611	25.00	1916	171,998	19,717	11.46
1909	219,163	54,791	25.00	1917	69,439	9,264	13.34
1910	265,185	80,087	30.20	1918	37,220	4,513	12.13
1911	291,054	85,312	29.31	Calendar years:			
1912	338,180	98,861	29.23	1919	257,381	44,520	17.30
1913	381,879	109,651	28.71	1920	618,450	109,737	17.74
1914	398,159	64,294	16.15				

Manufactures of asbestos—Domestic exports (fiscal years).

Exported to—	1910	1911	1912	1913	1914	1915
Austria-Hungary	$2,016	.....	$704	$2,160	$925	.....
Belgium	8,748	$8,832	4,483	6,700	9,509	$94
Denmark	1,004	740	3,425	6,240	9,375	12,387
France	4,304	6,011	8,529	4,686	10,902	10,030
Germany	23,829	27,284	16,906	11,327	11,507	591
Netherlands	2,997	3,177	6,101	4,331	6,404	69,551
United Kingdom	17,135	37,140	59,038	85,018	125,452	114,881
Canada	103,699	171,582	273,376	342,294	271,919	130,083
Honduras	51	59	248	605	5,985	3,431
Panama	12,145	5,399	7,860	4,915	5,826	5,956
Mexico	43,846	34,904	38,311	61,470	39,056	19,990
Cuba	36,550	45,116	30,885	44,779	44,811	42,564
Argentina	902	3,665	1,103	3,760	11,947	4,788
Venezuela	3,365	845	521	807	11,358	2,201
British India	1,157	642	1,125	228	27,002	1,221
Japan	2,039	2,013	3,101	5,518	3,209	15,966
Australia	8,576	7,530	15,738	20,736	19,076	18,900
Philippine Islands	3,300	6,654	8,497	24,150	21,674	10,115
All other	17,953	27,240	40,943	58,690	51,136	72,278
Total	293,616	388,833	520,894	688,414	687,073	535,027

Exported to—	1916	1917	1918	1919	1919 [1]
Austria-Hungary	.....	.....	.....	.....	$12,735
Belgium	.....	.....	.....	$175	40,428
Denmark	$15,596	$484	.....	12,553	22,527
France	10,092	39,508	$88,173	115,547	84,074
Netherlands	1,932	1,855	.....	9,366	51,237
United Kingdom	118,188	79,355	106,875	72,064	101,507
Canada	215,216	452,201	611,299	926,081	879,091
Honduras	1,931	2,905	2,485	2,896	1,533
Panama	95,208	83,655	34,852	58,845	63,797
Mexico	40,946	60,498	98,459	276,282	258,153
Cuba	133,281	271,441	350,015	244,045	465,973
Argentina	20,982	36,506	60,570	155,519	137,390
Venezuela	3,991	9,363	9,163	11,282	11,970
British India	14,998	6,533	53,265	38,483	48,146
Japan	27,943	68,336	136,977	188,914	166,102
Australia	40,761	42,304	62,622	95,160	105,798
Philippine Islands	13,667	13,070	44,203	77,083	98,753
All other	264,321	334,423	453,763	1,027,170	982,764
Total	1,019,083	1,502,437	2,112,721	3,311,465	3,531,978

[1] Figures are for calendar year.

ASBESTOS TEXTILES.

Asbestos yarn and woven fabrics—Summary table—Values.

Fiscal year.	Imports for consumption.[1]	Domestic exports.[1 2]	Amount of duty.	Actual or equivalent ad valorem rate.
				Per cent.
1910	$91,946	$293,616	$36,778	40.00
1911	83,661	388,833	33,464	40.00
1912	96,758	520,894	38,595	40.00
1913	94,562	688,414	37,824	40.00
1914	114,978	687,073	[4] 27,129	[4] 23.92
1915	35,770	535,027	7,153	20.00
1916	25,193	1,019,083	5,037	20.00
1917	23,208	1,502,437	4,641	20.00
1918	7,918	2,112,721	1,583	20.00
1919—Domestic production [3]	39,630	3,311 465	7,926	20.00
1919 [5]	187,816	3,531,978	37,563	20.00

[1] Fiscal years ending June 30.
[2] Includes all manufactures of asbestos.
[3] $60,000,000 to $70,000,000 annually. Estimated, C. J. Stover, Asbestos Textile Manufacturers Association; includes also products manufactured of yarns and woven fabrics.
[4] Change in rate of duty, by act of 1913, from 40 per cent to 20 per cent.
[5] Calendar year.

General Information.

TARIFF ACT OF 1913.

Paragraph 367.—Manufactures of * * *, asbestos * * *, or of which these substances, or any of them, is the component material of chief value, not specially provided for in this section, 10 per cent ad valorem; yarn and woven fabrics composed wholly or in chief value of asbestos, 20 per cent ad valorem.

DESCRIPTION AND USES.

Asbestos textiles are valued chiefly on account of their heat-resisting qualities and their durability.

The basis of all asbestos textiles is asbestos yarn. This yarn is made from asbestos crudes and fibers, often mixed with cotton to add strength and lessen expense. Frequently in twisting the yarn very fine brass or copper wire is used, which gives the material greater durability under certain conditions.

Practically all of the asbestos yarn is made by doubling two or more strands of spun asbestos together, as single yarns are not very satisfactory, owing to the fact that asbestos fibers are so lacking in uniformity that an even twist can not be given throughout the entire length of a single yarn. As many strands can be twisted together as may be desired—up to eight ply.

A standard method of numbering asbestos yarns was adopted by asbestos manufacturers of the United States in 1907 by which the number of yards per pound divided by 100 indicates the number of the yarn. Thus, yarn running 100 yards per pound would be No. 1; 200 yards per pound, No. 2; and so on up to 3,000 yards per pound for No. 30. British standards of asbestos yarns are arbitrary and do not compare with these numbers.

The yarn is woven into cloth, tape, and listing, from which are made theater curtains, gloves, clothing, high-pressure steam packing, bushings, gaskets, brake-band linings, tubing. The cloth is used for filtering acids, alkalies, gases, etc. One of the most recent uses of asbestos cloth is in the making of noninflammable mail bags for the aerial mail service.

Tapes or linings are used for brake-band linings, for insulating armatures and field coils, for wiping tin plates, for insulating pipes on locomotives, etc.

Tubings are used chiefly for primary electric cable insulation.

Brake-band linings are used on automobiles, trucks, tractors, hoists, cranes, etc., where high friction resistance and nonburning material are needed. They may be made from tapes woven from asbestos metallic yarns, or of asbestos cloth, frictioned, folded, and stitched.

Steam packings are used wherever steam is generated and transmitted for the packing of piston rods, stuffing boxes, for gasketing flanges, manholes, handholes, etc., also in connection with pumping machinery, handling oils, acids, alkalies, and gases.

Importance of asbestos in textiles.—Asbestos is noteworthy as being the only known mineral possessing a fiber which can be spun into

yarn and woven into cloth. Its fire-resisting properties are not found in any other material. The articles mentioned are practically indispensable for their particular purposes; without them industry would be seriously handicapped. For such purposes there is no substitute.

DOMESTIC PRODUCTION.

Accurate data on domestic production are not at hand. Statistics for the industry by the United States Census Bureau do not give separate data for the textile branch of the industry. It is known, however, that this branch of the domestic industry has had an extensive development in recent years.

There are 17 establishments in the United States making yarns, woven fabrics, tapes, tubing, etc. The capital investment in 13 of these establishments is estimated at approximately $15,000,000 and their annual output at $35,000,000 at factory.[1]

In making the above estimate only those concerns engaged in the conversion of raw asbestos into finished yarns, cloths, tapes, tubings, etc., were considered. In addition to this group and including the major production of the 17 establishments is another group of finishers, such as the large manufacturers of packings, brake linings, etc. These concerns take the product of the textile mills and convert it into ordinary articles of commerce. It is estimated that the value of finished products ultimately sold to consumers by finishers of brake linings, packings, etc., together with that part of the textile production sold direct to consumers by textile producers, amounts to approximately $60,000,000 to $70,000,000.

Materials.—The principal raw material used in the manufacture of asbestos textiles is asbestos, crude and mill fiber, though cotton, flax, rubber, and copper and brass wire are employed in connection with asbestos in the manufacture of some articles.

"Unmanufactured" asbestos, as it comes on the market, has been separated from adhering rock and is composed of fibers graded according to length. The longer fibers that can be picked out by hand are sold as "crude." Crude asbestos is divided into two grades, fibers over three-fourths inch long and fibers from five-sixteenths to three-fourths of an inch in length. The flaky fibrous substance that impregnates the rock in asbestos deposits is found in much larger quantities than the crude and makes up the greater part of the production. This is separated by a process of milling and is generally known as "fiber" or "mill fiber." Mill fiber is separated into three grades, Nos. 1, 2, and 3. Of these three grades only No. 1, by virtue of having the longest fiber, is suitable for spinning. The other two grades are used for paper stock.

Canada has always been the chief source of supply, though a considerable portion of the spinning fiber is mined in South Africa and in Arizona. In 1918 the United States received about 95 per cent of the total Canadian marketable production, or 134,813 short tons. From 2 to 4 per cent of the Canadian asbestos consists of the crude grades. The amount of marketable Canadian asbestos from the mill

[1] Data secured by correspondence.

rock (that remai ing after the crude has been extracted) will average from 7 to 10 per cent.[2]

Considerable quantities of asbestos have of late years been obtained by this country from Africa. The African mineral is of two distinct types: Crysotile or serpentine, a white asbestos produced in Rhodesia, and crocidolite, a blue asbestos produced in Cape Colony. The white mineral has exceptionally long, strong, fibers, which are used in spinning. Blue asbestos, on the other hand, forms the basis of a durable non-heatconducting pipe covering, while as a filtering material, jointing and packing, in connection with acid plants, it is unexcelled. Recent developments have demonstrated the adaptability of blue asbestos fiber to spinning operations. Practically all the importation from South Africa consists of crude fiber.

Arizona asbestos is classified as (1) fine, soft, silky, spinning fiber of first-class spinning quality, or (2) as harsh fiber not suitable for textile manufacture. Although the second grade may have great length, it is harsh and brittle, and when put through textile processes creates a good deal of "splint," which makes a rough looking yarn, altogether unsuited for textiles of the finer grades. The smaller percentage of iron contained in the best grade of Arizona fiber, when compared with Canadian fiber, makes the Arizona asbestos especially useful for electric insulation.

Small quantities of asbestos were imported annually from Russia prior to 1916. Though Russian asbestos deposits may be regarded as second only to those of Canada, conditions since the war for the time being have practically cut off supplies from that source.

Receipts of crude and mill fiber during the war were insufficient, and for several years after the war available asbestos has been barely sufficient to take care of the demand. Over 99 per cent of the available supply comes from Canada and South Africa. Other accessory materials are obtainable in sufficient quantities from American producers and jobbers.

Equipment.—All machinery employed by asbestos manufacturers in this country is of American make, and in quality is fairly comparable to foreign machinery. European manufacturers to a large extent employ second-hand cotton machinery, or cotton-waste spinning machinery. English manufacturers make more use of cotton-waste methods in spinning than do American manufacturers.

Methods of production.—Practically the same methods, with but minor differences, adopted in general textile operations are employed in producing asbestos textiles. Power and automatic machinery are used in about the same proportion as in yarn and cotton mills.

No child labor is employed in the domestic industry. Male labor is used in crushing, mixing, and calendering, and considerable female labor in spinning and twisting. There is little hand labor.

Organization.—The efficient conduct of the industry requires a minimum investment for each factory of approximately $200,000 to $300,000 and considerable free capital for the purchase of raw materials and the extension of credit.

Although the market for asbestos textile products is confined chiefly to the engineering trades, it is relatively large and expanding rapidly.

[2] Canadian Mining Journal, Mar. 1, 1918, p. 90.

Geographical distribution.—There are seven asbestos textile plants in Pennsylvania, two in Massachusetts, two in New Jersey, two in South Carolina, and one each in North Carolina, Indiana, Ohio, and California.

Domestic production and consumption.—The manufacture of asbestos textile products comes, properly, under two heads: (1) The conversion of unmanufactured asbestos into yarns and the weaving of yarns into cloths, tapes, tubings, etc.—products of the textile mills and, (2) the making of various articles from products of the textile mills.

Official statistics of domestic production are not available. An estimate in 1920 places the annual production of the former group at $35,000,000, and of the two groups combined at $60,000,000 to $70,000,000.[3] To avoid duplication in arriving at the latter figure, consideration was given only to the amounts sold direct to consumers by each of the two groups.

The production capacity of American manufacturers is sufficient to supply domestic demands, and curtailment of production has been occasioned only by insufficient supplies of raw materials.

The consumption of asbestos products per capita in the United States far exceeds that of any other country, and it is generally accepted that the total American consumption is greater than the combined consumption of all other countries. Fully 50 per cent of the output of asbestos textiles in the United States is consumed in the automobile industry.

Domestic exports.—Separate statistics of exports of asbestos textiles are not available, these articles being included by customs officials with other kinds of asbestos manufactures. Exports of all kinds of asbestos manufactures were first recorded in 1910, amounting in that year to $293,616. During the following years, except 1914 and 1915, there were substantial annual increases which reached the maximum of $3,569,932 in the fiscal year 1920. The large demand for asbestos products abroad during the war continued after the cessation of hostilities.

The United States exports substantial amounts to many foreign countries, including practically all countries of importance. The largest amounts, however, go to Canada, Cuba, and the United Kingdom.

Customs export records have never differentiated between various kinds of asbestos manufactures, but it is believed that there has never been any considerable volume of exported asbestos textiles.

FOREIGN PRODUCTION.

The principal foreign countries producing asbestos textiles are England, Germany, Austria, and Italy. England is by far the most important.

Capital invested in the industry in foreign countries is stated, by American manufacturers, to be approximately as follows: England, $25,000,000; Germany, $14,000,000; Austria, $25,000,000; and Italy, $1,000,000.[4]

In textile goods British manufacturers have maintained a high standard of efficiency, due to their greater experience in the manu-

[3] Data from correspondence in Tariff Commission's files.
[4] C. J. Stover, American Asbestos Manufacturers Association.

facture of textiles and their supremacy in the spinning of yarn. Germany, chiefly by virtue of cheap labor, was able to meet competitive conditions and produce yarn on a large scale. The output per machine was less, and the quality was generally inferior to that of British make. Mules were employed to a considerable extent enabling the use of somewhat shorter fiber, but Germany was unable to compete with the British spinners in the same quality of product.

British manufacturers are large users of Rhodesian fiber, which is much cheaper than Canadian—the fibers chiefly used in America. American manufacturers prefer the Canadian asbestos because they have found it easier to spin. The Rhodesian fibers, being exceptionally smooth, incline to slip by one another when twisted in the spinning operation. British spinners have overcome the difficulties in spinning this material by mixing it with a small percentage of Canadian fiber to increase the friction.

One or two American manufacturers use Rhodesian fiber, but broadly speaking they are dependent upon Canadian asbestos for their raw material, whereas, it is estimated,[5] 60 to 80 per cent of the spinning fiber used in England is Rhodesian and South African.

On account of the difference in grading, it is impossible to make a detailed comparison of the cost of Rhodesian and Canadian fibers. It may, however, be said that No. 1 Rhodesian is practically equal to No. 2 Canadian crude, and sells for from 30 to 50 per cent less per ton. A machine will spin practically the same lengths of Rhodesian and Canadian yarns per day, but the weight of the product from Rhodesian material is about 20 per cent less. Since yarn is usually sold by weight, the apparent output is reduced by one-fifth when operating in Rhodesian fiber in spite of the fact that Rhodesian fiber actually runs a little faster through the cards, due to its greater flexibility and freedom from dust.[5]

Of the eight firms in the United Kingdom that spin asbestos yarn the three largest furnish the bulk of the output. These firms also engage in the manufacture of heavy products, such as slates and millboards, as well as packings, coverings, and finished textiles. All three of these firms own mines in Rhodesia or South Africa and can bill their own consumption at cost.

Definite statistics of recent English production are difficult to secure, and the last official English census was taken 13 years ago—in 1907. A personal investigation of the situation in England by an agent of the Tariff Commission indicates that the total output of all classes of asbestos products is several times larger in the United States than in England.

IMPORTS.

The largest importations of asbestos textiles made in any fiscal year prior to the war occurred in 1914 ($114,978). After the beginning of hostilities in Europe (August, 1914) imports decreased greatly, reaching their lowest point in the fiscal year 1918 ($7,918). After the cessation of hostilities a speedy recovery took place, so that by the expiration of the fiscal year 1920 the importation ($411,048) was larger than during any previous 12 months period. The larger

[5] Paul M. Tyler, special agent to England of the United States Tariff Commission.

amount was due somewhat to increased prices but mostly to the larger quantities of both yarn and woven fabrics imported.

In recording imports by countries, American customs officials do not distinguish between textiles and other products of asbestos. Official import statistics, however, indicate that of asbestos manufactures of all kinds imported the United States received by far the largest amounts from England—France and Canada being the only other countries of importance—the percentages for these three countries of the total in 1919 being 63, 21, and 16, respectively. Prior to 1915 the principal countries of origin in order of importance were England, Germany, and Austria-Hungary.

Imports of asbestos textiles are largely due to greater cheapness of the foreign article.

PRICES.

Comparison of American and British yarns is extremely difficult, since different ratings are used. Yarns, however, are sold by weight in both countries.

Asbestos metallic yarns of closely similar quality sold in the United States in October, 1919, at 85 cents per pound, and in England at 45 to 50 cents per pound. Prices of other textiles products in England on the same date averaged roughly one-half those obtained in the United States with some as low as one-third the price in the latter country. The prices given in the statistical tables *infra* are for uncontracted lots and do not represent the prices received by manufacturers for the bulk of their product which is sold generally under contract at much less (frequently 25 to 40 per cent) than the quoted prices for small lots.

TARIFF HISTORY.

No tariff changes were made in the duty on asbestos manufactures of all kinds (25 per cent ad valorem) from 1883 to 1909.

The act of 1909 distinguished between woven fabrics and other manufactures of asbestos, and raised the duty on the former product from 25 per cent to 40 per cent ad valorem.

The act of 1913 separated all asbestos textiles from other asbestos products by specifically mentioning "yarn and woven fabrics composed wholly or in chief value of asbestos" and the duty was fixed at 20 per cent. The duty on manufactures of asbestos was reduced to 10 per cent. In the fiscal year 1914, after the new law had been in operation only 9 months, the value of imports increased 22 per cent and the revenue derived decreased 28 per cent.

COMPETITIVE CONDITIONS.

Among the branches of the asbestos industry, foreign competition in the American market is keenest in textiles. These products are costly and transportation is a minor item. Practically the only foreign manufacturers who have sold any considerable quantity of asbestos products in the United States are those of England and Germany. After 1914, during the World War, Germany was not a factor in the trade. Even so late as the spring of 1921, German

producers had not resumed the manufacture of asbestos products on an extensive scale. England is the chief competitor of this country.

The methods of manufacture in the United States and England are practically the same, but American machinery is run at greater speed and the output per operative is greater in this country. However, the gain in production is partly offset by more rapid depreciation of machines.

British manufacturers have some advantage in the production of asbestos yarn, chiefly on account of their more extended use of Rhodesian or South African fiber which costs less in the open market than the Canadian. Moreover, since the three largest producers of asbestos manufactures in England are mine owners (in either Rhodesia or South Africa) they can bill the raw material to themselves at cost. Rhodesian and South African fiber is procurable in the United States at practically the same price as in the open market in England and is much cheaper than Canadian fiber which is used almost exclusively by most American manufacturers. The use in this country, however, of Rhodesian and South African fiber has increased rapidly in the last two or three years as American spinners have gained experience in the manipulation of the smoother fiber. The British advantage as regards raw material costs will tend to disappear, since it is chiefly due to the larger substitution of Rhodesian asbestos for the more costly Canadian material. American establishments owning mines in Canada are not as subject to these conditions as are those which do not own mines. With the wider adoption of Rhodesian fiber Canadian producers may be forced to reduce prices to meet competition not hitherto experienced.

British manufacturers express the opinion that they can not compete with manufacturers in the United States, but may sell certain products in the United States, provided domestic manufacturers maintain prices at levels which bear no relation to cost of production. British prices are from two and one-half to three times higher than they were before the war, whereas American prices, which in 1914 were not greatly higher than British prices, plus the duty of 25 per cent, are now from two to three times those obtained in England. The profit in the turnover of British plants was recently estimated to average about 15 per cent.[6]

It is announced that Turner Bros. Asbestos Co. (Ltd.), one of the largest British firms, is to build a plant in the United States. That company claims that the cost of producing yarn and other asbestos products in the United States is much less than the combined cost of producing these articles in England and shipping them to this country. It is said that the construction of the plant is only delayed by difficulty in getting building material and labor.[6]

It is given as the opinion of United States manufacturers that some understanding exists between English manufacturers whereby English textiles are offered in the United States at lower prices than are asked for the same goods in England, for instance, that an article selling in England at 70 cents is offered in the United States at 60 cents. It is further stated that instead of making, say, 20 per cent profit in England, English manufacturers will sell for a profit of

[6] Paul M. Tyler, special agent to England of the United States Tariff Commission.

10 or 5 per cent, and sometimes without profit, to users in the United States.

Definite statistics of wages paid in the asbestos industry are not available. Wages paid in the past in the manufacture of asbestos textiles were lower in England than in the United States. The different processes employed in the manufacture of asbestos and cotton textiles are almost identical and wages paid in the latter industry indicate to a certain extent the rates paid in the asbestos industry.

About two-thirds of the operatives in the English asbestos textile mills are women. In April, 1921, the standard wage for the chief classes of workers in spinning and weaving was 45 to 50 shillings per week of 48 hours, but this was later reduced, in at least one establishment, to 36 shillings (about $7.20). About one-third of the workers are men whose wages, at the same time, ranged from £3 12s. to £4 (about $14 to $16) according to the character of work performed. Loom fixers and machinists were earning from £4 to £4 10s. (about $16 to $18). Eighty-spindle machines are used for spinning, each operator (female) tending one bank of 40 spindles. The speed is regulated by the strength of the fiber. British asbestos workers have no separate organization but most of them are members of the National Union of General Workers which has a membership of some 1,250,000 among more or less unskilled workers in a wide range of trades. The British manufacturers formed a pool for the purchase of raw materials and assisted in the production of munitions during the war. In 1920 this pool was revived and promises to be an important factor in the trade as it comprises all but one of the manufacturers and controls fully 90 per cent of the product. Its functions are to regulate prices, to act as an Employers' Association in dealing with the workers, and otherwise to promote joint interests. Price reductions made in the spring of 1921 were drastic and, in many cases, the products were selling at materially less than production costs.

Total asbestos yarn and woven fabrics, composed wholly or in chief value of asbestos—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1910	40 per cent		$91,946	$36,778		40.00
1911	do		83,661	33,464		40.00
1912	do		96,488	38,595		40.00
	Duty remitted, section 19		270			
1913	40 per cent		94,562	37,824		40.00
1914	do		22,223	8,889		40.00
	20 per cent		91,203	18,240		20.00
	Duty remitted, section 4, J 5		1,552			
1915	20 per cent		35,770	7,153		20.00
1916	do		25,193	5,037		20.00
1917	do		23,208	4,641		20.00
1918	do		7,918	1,583		20.00
1919	do		39,630	7,926		20.00
1920	do		411,048	82,210		20.00

Yarn composed wholly or in chief value of asbestos—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1914 [1]	20 per cent		$1,282	$256		20.00
1915	do		2,616	523		20.00
1916	do		1,629	325		20.00
1917	do		19,638	3,927		20.00
1918	do		5,250	1,050		20.00
1919	do		1,225	245		20.00
1920	do		180,759	36,152		20.00

[1] Oct. 3, 1913, to June 30, 1914; prior to June 30, 1914, included in "Woven fabrics composed wholly or in chief value of asbestos."

Woven fabrics composed wholly or in chief value of asbestos—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Valur per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1910	40 per cent		$91,946	$36,778		40.00
1911	do		83,661	33,464		40.00
1912	do		96,488	38,595		40.00
1912	Duty remitted, section 19.		270			
1913	40 per cent		94,562	37,824		40.00
1914	do		22,223	8,889		40.00
1914	20 per cent		89,921	17,984		20.00
1914	Duty remitted, section 4, J 5.		1,552			
1915	20 per cent		33,154	6,630		20.00
1916	do		23,564	4,712		20.00
1917	do		3,570	714		20.00
1918	do		2,668	533		20.00
1919	do		38,405	7,681		20.00
1920	do		230,289	46,058		20.00

Asbestos yarns and woven fabrics—Average prices paid by consumers in 1920.

[Asbestos; published monthly at Philadelphia, Pa.]

Month.	Yarns, 10s, commercial.	Cloth, 10s, commercial.	Yarns and cloth, special.
	Per pound.	*Per pound.*	*Per pound.*
January	$1.10–$1.40	$1.20–$1.50	$1.50–$5.25
February	1.25– 1.75	1.35– 1.90	1.75– 5.25
March	1.25– 1.75	1.35– 1.90	1.75– 5.25
April	1.25– 1.75	1.35– 1.90	1.75– 5.25
May	1.25– 1.75	1.35– 1.90	1.75– 5.25
June	1.35– 1.90	1.50– 2.00	2.00– 6.00
July	1.35– 1.90	1.50– 2.00	2.00– 6.00
August	1.35– 1.90	1.50– 2.00	2.00– 6.00
September	1.35– 1.90	1.50– 2.00	2.00– 6.00
October	1.35– 1.90	1.50– 2.00	2.00– 6.00
November	1.35– 1.90	1.50– 2.00	2.00– 6.00
December	1.35– 1.90	1.50– 2.00	2.00– 6.00

Asbestos textiles—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883....	39	Asbestos, manufactured.....	25 per cent ad valorem.
1890....	459	Manufactures of * * * asbestos, * * * or of which these substances or either of them is the component material of chief value, not specially provided for in this act.	Do.
1894....	351	Manufactures of * * * asbestos, * * * or of which these substances or either of them is the component material of chief value, not specially provided for in this act.	Do.
1897....	448	Manufactures of * * * asbestos, * * * or of which these substances or either of them is the component material of chief value, not specially provided for in this act.	Do.
1909....	462	Manufactures of * * * asbestos, * * * or of which these substances or any of them is the component material of chief value, not specially provided for in this section.	Do.
		Woven fabrics composed wholly or in chief value of asbestos.	40 per cent ad valorem.
1913....	367	Manufactures of * * * asbestos, * * * or of which these substances or any of them is the component material of chief value, not specially provided for in this section.	10 per cent ad valorem.
		Yarn and woven fabrics composed wholly or in chief value of asbestos.	20 per cent ad valorem.

Court and Treasury Decisions.

Woven fabrics composed wholly or in chief value of asbestos with a border to bind the edges, were held to come within the second clause of this provision in the act of 1909 for woven fabrics composed wholly or in chief value of asbestos, and not within the first clause as manufactures of asbestos. (United States *v.* Grasselli Chemical Co., 5 Ct., Cust. Appls., 320.) *Asbestos yarn* is dutiable under this paragraph and not free under paragraph 406 as unmanufactured. (Abstract 39424.)

ASBESTOS PACKINGS.

General Information.

TARIFF PARAGRAPH, ACT OF 1913.

PAR. 367. Manufactures of * * * asbestos, * * *, or of which these substances or any of them is the component material of chief value, not especially provided for in this section, 10 per cent ad valorem.[7]

[7] Includes all asbestos manufactures except yarn and woven fabrics.

DESCRIPTION.

Asbestos packings are of two general types or classes.

Class 1.—Included in this class are all packings made from crudes and fibers by regular standard textile practice, viz, crushing, mixing, carding, spinning, weaving, treating. There are several different kinds of such packings:

(*a*) *Wick or rope packings* are made from rovings produced by ordinary carding machinery, the rovings being twisted to the desired diameter and density on wick and rope making machinery. They are used for emergency packings, for wiping tin plate, sheet steel, and other metals during the cooling period, and for general packing purposes in and near hot surfaces.

(*b*) *Braided or twisted packings* are made of asbestos yarns, the yarns being twisted or braided on machinery employed throughout the general textile industry for such purposes. Braided or twisted packings are frequently graphited and lubricated. They are used for packing valve stems, small piston rods, and small stems of angle and globe valves, sight-feed lubricators, and the like.

(*c*) *Laid or high-pressure steam packings* are made from asbestos cloth, rubber treated, cut to size in strips and laid or wound to desired finished size, either square, round, or oblong, and with or without rubber, wire, lead, or core. These are employed for general packing purposes, such as piston rods, stuffing boxes, and the like, especially in service using high pressure and superheated steam.

(*d*) *Gaskets* are made from rubber-treated asbestos cloth, cut in strips, folded, and formed to shape and size desired. They may be folded and tape jointed, or they may be made from asbestos tubings, the latter being known as seamless gaskets. Gaskets are used to seal joints on manhole or handhole openings of boilers, and at flanges in pipe lines, also at ports of gasoline motors.

Class 2.—In this class are packings and gaskets made from compressed sheet. This compressed sheet is fabricated by mixing short asbestos fibers with binding and filling materials. By compressing and a semivulcanizing process, a product, tough, semiresilient, and of the desired size and thickness is obtained. Compressed sheet packings are used for a great variety of purposes, principally for jointings in connection with internal-combustion motors.

These packings are also employed for emergency uses, the engineer preferring to cut gaskets from a sheet of compressed packing rather that wait to secure gaskets of a given size from a supply house.

Asbestos paper and millboard are used in considerable quantities for very hot joint packing in gas stoves, exhaust pipes, furnace covers, and other types of joints. The first cost of asbestos paper and millboard is less, but it is inferior to the regular compressed sheet packing.

No important substitutes for asbestos packings are known, asbestos being the only permanent, elastic, heat resisting, and generally satisfactory material available for such purposes.

DOMESTIC PRODUCTION.

The capital invested in the manufacture of asbestos packings in the United States is roughly estimated at $25,000,000, and the value of the annual output at factory at $25,000,000. The Priorities Division

of the War Industries Board gave manufacturers in this industry class 4 rating, in 1918.

Materials.—The principal raw materials are asbestos yarn, asbestos cloth, asbestos fiber, rubber, and filler (china clay or similar material).

Asbestos yarn and cloth are obtained from domestic manufacturers of these articles and from Europe—principally England, Germany, and Austria, The grade of asbestos fiber employed in making compressed sheet packings is obtained chiefly in Canada, though some is imported from South Africa and relatively small quantities are mined in Arizona. Rubber and accessory materials are obtained in sufficient quantities in the United States.

Supplies of asbestos yarn, asbestos cloth, and asbestos fiber available and in sight are not always sufficient to take care of the demand. The United States is dependent on British-controlled territory for most of its supply of raw asbestos, as fully 99 per cent of the available supply is mined in Canada and southern Africa. There are extensive deposits of asbestos in Russia, and before the European war the United States received small amounts from that country annually, but after 1915 conditions in Russia became such that all exportation to the United States ceased.

Equipment.—All machinery employed in the domestic manufacture of asbestos packings is made by American machinery manufacturers and in point of quality is fairly comparable to foreign machinery.

Methods of production.—Practically the same methods, with minor differences, are employed in the industry as in general textile operations. All asbestos cloth used in the manufacture of packings is impregnated with rubber cement. Power and automatic machinery are used in about the same proportion as in general textile mills.

Production is limited to some extent by the inability of American manufacturers to obtain at all times sufficient supplies of asbestos yarn. This condition is directly traceable to the limited supplies available of asbestos, crude and fiber, for which American manufacturers are almost wholly dependent on foreign sources.

In the United States no child labor is employed. All work is done in the factories. Little hand labor is employed, and there is about the same use of skilled labor as in general textile mills.

Organization.—The efficient conduct of the industry requires a minimum investment of from $5,000 to $10,000 and considerable free capital for the purchase of raw materials and the extension of credit.

The market for asbestos packings is confined almost wholly to the machinery trade. It extends to all parts of the United States and to foreign countries.

The capital invested in the American industry, roughly estimated at $25,000,000, is divided among numerous concerns, some of which are also engaged in other branches of the asbestos industry.

Geographical distribution.—The manufacture of asbestos packings is carried on mostly in States on the Atlantic coast. There are seven principal factories in Pennsylvania, six in New York, three in New Jersey, three in Ohio, and one each in Indiana, Connecticut, North Carolina, and South Carolina.

History of the industry.—The American industry had its beginning in a very small plant in Connecticut about 35 years ago. From this beginning it has grown to about 23 important plants and numerous small concerns manufacturing chiefly other products.

Domestic exports.—Official statistics of the Department of Commerce do not show separate compilations of exports of asbestos packings. Some packings are being exported, but data showing amounts or destinations are not available.

FOREIGN PRODUCTION.

Prior to the World War Germany, England, Austria, and Italy, in the order named, were the principal foreign producing countries, Germany being by far the most important. In style, size, and class foreign-made packings are similar to and in quality they compare favorably with American packings.

IMPORTS.

In compiling import statistics United States customs records do not differentiate between asbestos packings and "other manufactures of asbestos." Imported amounts of asbestos packings therefore are not definitely known. However, it is the general opinion among manufacturers and importers of these articles that asbestos packings are imported to a much less extent than asbestos yarns and woven fabrics, the total imports of which from 1915 to 1919 averaged slightly more than $26,000 annually.

Prior to 1915 foreign asbestos packings were received chiefly from Germany, England, Austria, and Italy; after that year the war stopped exports from Germany, Austria, and Italy for the time being, and only England continued to ship to this country.

PRICES.

Comparable prices of certain classes of domestic and foreign asbestos packings are not available.

Prices of asbestos packings in both domestic and foreign markets closely follow the prices of asbestos yarns; thus, when asbestos yarns are selling at, say, 85 cents per pound, asbestos packings also sell at 85 cents per pound. The additional cost for labor in manufacturing and distributing packings is compensated for by the reduced cost of raw material in the finished product through the introduction of cheap filler compounds with the higher-priced asbestos.

That asbestos packings sell at much lower prices in England than in America is indicated by the price of yarns in the two countries. Asbestos yarns closely similar in quality sold in the United States in October, 1919, at 85 cents per pound and in England at 45 to 50 cents per pound.[8]

TARIFF HISTORY.

Asbestos packings have never received special mention in any of the tariff acts.

As no records are in existence showing annual importations it is not possible to discern the effect of the lower rate of duty on the volume imported or the revenue produced. It may be said, however, that as late as 1920 domestic production had not been checked by reason of the lower duty on imports of foreign packings into the United States under the act of 1913.

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[8] For prices of asbestos yarns see page 36.

COMPETITIVE CONDITIONS.

American manufacturers of asbestos products are almost entirely dependent upon foreign sources for crude asbestos. Most of this they obtain in Canada; the rest in Rhodesia and South Africa. Prior to 1915 small amounts came from Russia, but this source of supply has been cut off for the time being. America uses nearly all of the Canadian output. It was reported in 1918 that more than 95 per cent of the total Canadian production of asbestos was brought to the United States.[9]

The principal foreign competing countries—Germany, England, and Austria—are not better supplied with deposits than the United States, though the world's principal asbestos deposits are in British-controlled territory—Canada, Rhodesia, and South Africa. There are no asbestos deposits in the British Isles, and English manufacturers import practically all the mineral from South Africa. Asbestos mined in Germany is suitable only for the manufacture of asbestos pulp,[10] and, although the occurrence of asbestos in Austria has been reported,[11] so far as ascertained no asbestos is mined in that country. Both Germany and Austria receive their supplies of the mineral mainly from Rhodesian and South African deposits.

It has been possible to import foreign packings for less than prevailing prices asked for American packings of similar grade. Nevertheless domestic manufacturers have experienced little difficulty in disposing of their products at remunerative prices, although foreign packings are said to be as good in quality as, and in some cases better than, American packings.

In recent years England has been the only country from which packings have been shipped to the United States, but the quantities have been comparatively small and largely supplementary. The lack of severe English competition in the United States may be attributed to the great demand in English, colonial, and near-by European markets.

Germany and Austria, formerly the largest manufacturers of asbestos packings, have been practically out of the American market since 1914. In Germany, at the outbreak of the war, stocks of raw asbestos were small. Imports were cut off and large supplies were necessary during the war. Since the war small quantities received from Holland and Switzerland have been inadequate to meet the demand. Supplies can be secured in other countries, but deliveries are extremely slow and prices so high that the prospect of German packings entering into competition with the American product in the United States is remote. In Austria the situation in the asbestos industry is similar to that in Germany.

Other competitive conditions in the asbestos industry are outlined in the Tariff Commission's surveys on "Asbestos, crude" and "Asbestos textiles."

TARIFF CONSIDERATIONS.

Although a large part of the asbestos packings imported are made of *asbestos woven fabrics* further advanced in manufacture by being shaped and coated with rubber or other materials, they enter the

[9] J. S. Diller in "Asbestos in 1918," published by the U. S. Geological Survey.
[10] "Asbestos," March, 1920, p. 12.
[11] Political and Commercial Control of the Mineral Resources of the World, No. 21, p. 8.

United States as manufactures of asbestos at a duty of 10 per cent ad valorem, while *asbestos woven fabrics*, under the same paragraph (367) of the tariff act, are required to pay a duty of 20 per cent ad valorem.

Though manufactures of asbestos have nothing in common with manufactures of amber, bladders, or wax, these articles are all included in the same paragraphs of the tariff law.

All other manufactures of asbestos [1]*—Imports for consumption—Revenue.*

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1910	25 per cent		$173,239	$43,309		25
1911	do		207,393	51,848		25
1912	do		241,064	60,266		25
1912	Duty remitted, sec. 19.		358			
1913	25 per cent		287,308	71,827		25
1913	Duty remitted, sec. 5.		9			
1914	25 per cent		59,085	14,771		25
1914	10 per cent		223,942	22,394		10
1914	Duty remitted, sec. 4, J 5.		154			
1915	10 per cent		196,799	19,679		10
1916	do		146,805	14,680		10
1917	do		46,231	4,623		10
1918	do		29,302	2,930		10
1919 [2]	do		69,565	6,957		10
1920 [2]	do		139,535	13,954		10

[1] Includes all manufactures of asbestos other than yarn and woven fabrics.
[2] Calendar year.

Asbestos packings—Average market prices per pound paid by consumer, in 1920.

[Asbestos, published monthly at Philadelphia, Pa.]

Months.	Wick and rope packing.	High-pressure steam packing.	Wire inverted sheet.	Listings and tapes.
January	$0.65–$0.90	$1.00–$1.75	$0.80–$1.50	$1.50–$6.00
February	.65– .90	1.00– 1.75	.90– 1.50	1.75– 8.00
March	.65– .90	1.00– 1.75	.90– 1.50	1.75– 8.00
April	.65– .90	1.00– 1.75	.90– 1.50	1.75– 8.00
May	.65– .90	1.00– 1.75	.90– 1.50	1.75– 8.00
June	.65– 1.00	1.25– 2.00	1.00– 1.50	1.75– 1.90
July	.65– 1.00	1.25– 2.00	1.00– 1.50	1.75– 1.90
August	.65– 1.00	1.25– 2.00	1.00– 1.50	1.75– 1.90
September	.65– 1.00	1.25– 2.00	1.00– 1.50	1.75–10.00
October	.65– 1.00	1.25– 2.00	1.00– 1.50	1.75–10.00
November	.65– 1.00	1.25– 2.00	1.00– 1.50	1.75–10.00
December	.65– 1.00	1.25– 2.00	1.00– 1.50	1.75–10.00

Asbestos packings—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883....	39	Asbestos, manufactured.....	25 per cent.
1890....	459	Manufactures of * * * amber, asbestos, bladders, * * * wax, or of which these substances or either of them is the component material of chief value, not specially provided for in this act.	25 per cent.
1894....	351	Manufactures of amber, asbestos, bladders, * * *, wax, or of which these substances or either of them is the component material of chief value, not specially provided for in this act.	25 per cent.
1897....	448	Manufactures of amber, asbestos, bladders, * * * or wax, or of which these substances or either of them is th component material of chief value, not specially provided for in this act.	25 per cent.
1909....	462	Manufactures of amber, asbestos, bladders, * * * or wax, or of which these substances or any of them is the component material of chief value, not specially provided for in this section.	25 per cent.
1913....	367	Manufactures of amber, asbestos, bladders, or wax, or of which these substances or any of them is the component material of chief value, not specially provided for in this section.	10 per cent.

Court and Treasury Decisions.

Asbestos packing, not woven, comes within the 10 per cent rate in paragraph 367 of the act of 1913 as manufactures of asbestos, under the practice of customs officers at New York.

ASBESTOS PAPERS AND MILLBOARDS.

General Information.

TARIFF PARAGRAPH, ACT OF 1913.

Par. 367. Manufactures of * * *, asbestos, * * * or of which these substances or any of them is the component material of chief value, not specially provided for in this section, 10 per cent ad valorem.

DESCRIPTION.

Asbestos paper, as the name implies, is a paper made from asbestos fiber. It varies in thickness from about one one-hundredth to one-eighth inch. Thicknesses up to and including one-sixteenth inch are known as asbestos paper, and three thirty-seconds and one-eighth inch thicknesses are spoken of as "rollboard." The width is generally 36 inches, and the paper is put up in rolls weighing approximately 100 pounds each.

Asbestos millboard is made of asbestos fiber with a small percentage of cementing or sizing material, built up in thin layers in a manner similar to paper, in sheets 42 by 48 inches, and usually from one-sixteenth to one-half of an inch in thickness.

The chief uses of asbestos paper and millboard are for high-pressure gaskets and packings, insulations, lining for stoves, air-cell pipe covering, roofing, building paper, and other purposes in the building trades. Probably the largest consumption is for wrapping hot-air furnace pipes and risers, and for steam pipe coverings.

Insulating material made of 85 per cent magnesia and 15 per cent asbestos; also hair felt, cork, and wood felt are competing articles for pipe coverings. Ordinary building paper, tar paper, etc., may also be considered substitutes for asbestos paper in building construction where fireproofing is not essential.

DOMESTIC PRODUCTION.

The United States Census Bureau reports that in 1914 there were 10 establishments in the United States manufacturing asbestos building materials—slates, sheathing, siding, air-cell covering, flooring, etc.—and other articles such as mats, pads, holders for sad irons, rings, tapes, yarns, cloths, packings for ice boxes and refrigerator cars, friction and transmission facings and linings, and other asbestos manufactures. As reported by the census for these 10 establishments, the total capital was $2,723,000; the value of the products, $1,813,000; and the industry gave employment to an average of 651 employees with annual wages amounting to $329,000. The Tariff Commission, however, is credibly informed that in 1914 at least 30 establishments manufactured these products and one concern alone reports that it employed 650 workers in that year.

Asbestos paper and millboard occupy an important place in the asbestos industry. The manufacture of these articles is desirable owing to the fact that it permits the utilization in the same plant of short fibers and waste from spinning operations. The uses are varied and the products find ready sale on account of fire-resisting properties and insulating efficiency.

Raw materials.—Asbestos paper is composed of from 90 to 95 per cent asbestos fiber and from 5 to 10 per cent binding material, consisting of starch, flour, cold-water paste, clay, or other fillers.

Because of the greater cost of long asbestos fibers, only the short-fiber grades which are not suitable for spinning (ordinarily termed "paper stock") are used. These fibers are generally less than one-half inch in length, the average being approximately one-fourth inch. Shorter grades make an inferior paper, resulting in considerable breakage in the finished article.

Nearly all the pulp fiber used in the United States is imported from Canada free of duty.

Methods of production.—Raw asbestos fiber, scrap asbestos, binding material, and water are placed in a beater and agitated until the fibers are separated and a smooth consistent pulp is obtained. From the "beater" the material is discharged into a "stuff chest" of large capacity, in which the pulp is constantly agitated, so that as new "beater" lots are fed into it a uniform mixture is made and small variations in individual "beater" lots are prevented from appearing in the finished paper. From these "stuff chests" the pulp is pumped into regulating boxes which control the quantity fed to the paper machine. From the regulating box the pulp goes to the "flow box," where additional water and the overflow from the "wet end" are added to bring the pulp to proper consistency for feeding into the "wet end." This "flow box" also serves to settle the sand and hard particles regularly found in commercial asbestos fiber as it comes from the mines. The pulp then proceeds to the "wet end," where it is deposited on revolving, screen-covered cylinders and in turn transferred from these cylinders to a continuous woolen felt. The number of cylinders used, together with the speed of the machine and consistency of the asbestos pulp, determines the thickness of the asbestos sheet. A second woolen felt is fed over the first, so that the pulp lies sandwiched between, and the surplus water is then squeezed out of the pulp by means of heavy press rolls which mat the fibers

together. At the end of this "wet end" the continuous sheet of wet asbestos paper passes over a long bank of steam-heated cylindrical driers. The moisture is gradually driven out of the wet paper by these driers and the dry sheet of asbestos paper is obtained.

The sheet, usually 74 inches wide, is wound on storage rolls. From these large rolls the sheet is led through slitters which cut it into 36-inch widths and then to the rewinders, where it is wound into rolls of approximately 100 pounds each. These rolls are taken off, wrapped, and headed and are ready for the market.[12]

In manufacturing asbestos millboard entirely different machines are used. The original mixture is similar, but continuous drums are not employed. The board is built up on a rectangular screen. When the required thickness is obtained, the material is partly dried by squeezing in a hydraulic press. It is then stored in a drying room.

In either case the direct labor involved is comparatively small, although somewhat greater in producing millboards. The methods of manufacture in the United States and in England are almost identical. Similar methods are doubtless employed in other foreign countries.

Organization.—In 1920, asbestos paper was manufactured by 10 concerns in 14 factories located in the States of Pennsylvania, Ohio, Massachusetts, New York, New Jersey, Maryland, and Wisconsin.

History of the industry.—The manufacture of asbestos paper began commercially about 40 years ago, but its principal development has taken place during the past 25 years. Many experiments were made to manufacture suitable asbestos printing paper, but on account of the difficulty of obtaining a smooth and even surface and the tendency of the material to absorb ink, like blotting paper, it was found to be not well adapted for this purpose. Early uses of asbestos paper were for ornamental wall paper and carpet linings. None of these uses has been developed in a practical way, but the manufacture of asbestos paper has become a very important industry and it has found extensive uses in ways that were not foreseen by early investigators.

The first paper made in the United States was manufactured by John Roberts & Son Co., in 1876, in a mill near Waltham, Mass. The material first used was imported from Italy. About three years later Canadian fiber was introduced; the shorter grades of fiber which would otherwise be wasted were used for the manufacture of paper and millboard and proved to be very satisfactory. For several years the product of this mill was sold through Rice Kendall, of Boston, Mass. From 1881 to 1900 the H. W. Johns Co., of New York, took the entire product, which was 300 to 700 tons a year. The latter company built their own asbestos mill at Brooklyn, N. Y., in 1900. Keasby & Mattison Co., of Ambler, Pa., began to manufacture in 1897. Other early manufacturers were the Asbestos Paper Co., at Baldwinsville, Mass., and B. S. Binney, at Shirley, Mass.

Domestic production and consumption.—Production in the United States has made tremendous strides, some plants manufacturing as much paper in a day as was made in an entire year 25 years ago. The average domestic production in the last three or four years has

[12] From "Asbestos," published by Secretarial Service, Philadelphia, Pa., January, 1921.

been about 25,000 to 30,000 tons a year, and the present plant capacity is much greater than these figures indicate.

The bulk of the output is consumed in this country, and the existing domestic manufacturing capacity is adequate to supply normal demands.

Domestic exports.—Official statistics of exports do not distinguish between the various classes of asbestos manufactures, but it is known that the bulk of the exports under this classification consists of asbestos shingles and corrugated sheathing which are sold chiefly in Canada and Latin American countries. The statistical tables of exports of all classes of manufactured asbestos are given in the discussion of asbestos textiles, supra.

FOREIGN PRODUCTION.

Among the foreign producing countries only Canada, Great Britain, and Germany are of importance at the present time in the manufacture of asbestos paper and millboard. Of these Canada is the only country in a position to compete successfully in the domestic market. However, that country has but one small plant manufacturing this product, whereas in the United Kingdom there are eight firms that manufacture asbestos paper and millboard in connection with other asbestos products and two firms that manufacture only heavy asbestos products under which paper and millboard are classed. Heavy asbestos products of European origin are, however, practically eliminated from the American market because of transportation costs.

IMPORTS.

Official statistics of the quantity and value of asbestos paper and millboard annually imported into the United States are not available. Only small quantities of these articles made in foreign countries are sold in this country and are the output of one Canadian mill.

PRICES.

Prices quoted on asbestos millboard are usually the same as the prices quoted on asbestos paper, and vice versa, and vary but little from month to month during the year.

Prices paid in 1920 by consumers for commercial grades ranged from $10 to $15 per 100 pounds in January, from $12 to $18 during February to November, inclusive, and $10 to $18 in December. For special grades the prices ranged from $15 to $35 per 100 pounds in January, $17 to $40 from February to May, inclusive, and $17 to $35 from June to December, inclusive.

Prices of the Canadian products are practically the same as those obtaining in the United States, whereas British prices usually range somewhat lower. In January, 1920, the price of millboard in England was £55 per ton of 2,000 pounds, or approximately $10.45 per 100 pounds (exchange at $3.80).

Asbestos paper and millboards—Average market prices paid per 100 pounds by consumers in 1920.

[Asbestos, published in Philadelphia, Pa.]

Months.	Paper.	Millboard.	Paper and millboard, special.
January	$10–$15	$10–$15	$15–$35
February	12– 18	12– 18	17– 40
March	12– 18	12– 18	17– 40
April	12– 18	12– 18	17– 40
May	12– 18	12– 18	17– 40
June	12– 18	12– 18	17– 35
July	12– 18	12– 18	17– 35
August	12– 18	12– 18	17– 35
September	12– 18	12– 18	17– 35
October	12– 18	12– 18	17– 35
November	12– 18	12– 18	17– 35
December	10– 18	10– 18	17– 35

TARIFF HISTORY.

Asbestos paper and millboard have never been specially mentioned in any of the tariff acts.

COMPETITIVE CONDITIONS.

In the manufacture of asbestos paper or millboard the main item is the cost of raw material—short asbestos fiber. Canadian fiber is the only variety that is used to any extent for this purpose either in the United States or Europe. South Africa and Rhodesia do not export any quantity of material suitable for the manufacture of these articles. Direct labor is a minor factor in cost, and, while some labor is needed to keep the automatic machinery in repair, differences in labor cost here and abroad are so small that they may be neglected in considering the strength of the domestic industry.

Next to raw material, transportation is probably the most important item. The freight on raw material from Canada to the United States and from Canada to Europe is nearly the same, but since most of the American factories are located near the Atlantic seaboard, they have advantages in the American market as compared with European manufacturers to the extent of the cost of shipment across the Atlantic. The development of the industry in Canada, close to the supplies of raw material, may, however, be a factor in the future. One plant has been established at Deschenes, Quebec, and is shipping some of its product into the United States.

Asbestos papers and millboards—Rates of duty.

Act of	Par.	Tariff classification or description.	Rates of duty.
1883	39	Asbestos, manufactured	25 per cent ad valorem.
1890	459	Manufactures of * * * asbestos, * * * or of which these substances or either of them is the component material of chief value, not specially provided for in this act.	Do.
1894	351	....do	Do.
1897	448	....do	Do.
1909	462	Manufactures of * * * asbestos, * * * or of which these substances or either of them is the component material of chief value, not specially provided for in this section.	Do.
1913	367	....do	10 per cent ad valorem.

ASBESTOS AND COMPOSITION PIPE AND BOILER COVERINGS.

GENERAL INFORMATION.

TARIFF PARAGRAPH, ACT OF 1913.

PAR. 367. Manufactures of * * *, asbestos, * * * or of which these substances or any of them is the component material of chief value, not specially provided for in this section, 10 per cent ad valorem.

DESCRIPTION.

Asbestos and composition pipe and boiler coverings are manufactures of non heat conducting and heat resisting materials used as coverings for heat generators and heat conductors. The principal ingredients are asbestos and magnesia. The coverings usually are prepared in tubes, blocks, or felt, or in a loose composition, as cement, to be applied with a trowel.

Some of the principal uses are for covering steam and hot water pipes, gas producing lines, and furnaces, in the manufacture of locomotives and stationary boilers, stoves, and ovens, as a lining for smokestacks and steel safes, and as a filler between boiler tubes.

DOMESTIC PRODUCTION.

In 1920 there were at least 36 concerns in the United States, distributed in various States from New York to California, manufacturing asbestos and magnesia coverings. The total quantity or value of the annual output is not known. The American industry, however, supplies the bulk of these articles used in this country.

Raw materials.—Asbestos fiber, asbestos paper, magnesia, and cementing material of a mineral character are the materials used. The asbestos used in the industry comes mainly from Canada and enters this country free of duty. Asbestos paper is made in this country from short asbestos fiber and a binder paste. Magnesia is produced from dolomite rock or magnesite of domestic origin. The import duty on carbonate of magnesia is 1½ cents a pound; the raw materials, magnesite or dolomite, are free of duty.

Equipment.—The machinery and other equipment used in the industry are manufactured in America in quantities sufficient to meet all requirements.

Methods of production.—Asbestos tubes are made of successive layers of asbestos paper separated by strips or dividers of the same material, forming a series of very small air spaces. The tube is made in 3-foot lengths and split lengthwise, for easy application; or of successive sheets of corrugated and flat asbestos paper cemented together, in sections usually 3 feet long, covered with canvas and split lengthwise.

Asbestos blocks and lagging are made up of asbestos fiber with cementing material on the outside surfaces to hold the fibers together, or of successive sheets of corrugated and flat asbestos paper cemented together. The blocks are usually made 3 feet long, from 12 to 14 inches wide, and from 1 to 3 inches thick. Lagging is made to templates as desired. Blocks are sometimes given a vitrifying treatment which renders the outside very hard and adds to the refractory character of the insulation.

Asbestos felt is made up of asbestos fibers, not pulped or molded, built up in layers by superimposing fiber upon fiber in sheets usually 72 inches long, 36 inches wide, and from one-eighth to 3 inches thick.

Asbestos cement is made by mixing together asbestos fiber and binding materials of a mineral character. Asbestos cement is ordinarily put up in bags containing 100 pounds. Magnesia cement, for use on irregular surfaces, is made of 85 per cent magnesia and 15 per cent asbestos, and is usually put up in bags containing 60 pounds.

Magnesia coverings consist of 85 per cent magnesia and 15 per cent asbestos fiber molded into the shapes required for insulating various surfaces.

The basic material is magnesium carbonate, which is produced in two ways: The eastern manufacturers secure magnesium carbonate from dolomite rock (magnesian limestone), which is found in large quantities in the East. The rock is first calcined and then slacked with a large volume of water. The resulting product, which consists of mixed hydrates of lime and magnesia, is next subjected to a course of saturation by carbonic acid gas (a by-product of the process), which dissolves the magnesia, leaving the lime. This magnesia solution is then filtered, boiled, and precipitated, producing pure carbonate of magnesia in the form of a fine white powder. The western manufacturers, to whom deposits of magnesite are more readily accessible than of dolomite, secure the magnesium carbonate from magnesite. The mined magnesite is first burned and then the magnesia is extracted by the process above described.[13] Asbestos fiber is added to the magnesia as a binder and to give it greater durability.

Geographical distribution.—Thomas's Register of Manufacturers, 1920, records 36 manufacturers of asbestos and magnesia pipe and boiler coverings in the United States, located in the States of New York, New Jersey, Pennsylvania, Maryland, Ohio, Illinois, Michigan, Wisconsin, Nebraska, Colorado, and California.

Domestic production and consumption.—The amount and value of the total annual production and consumption are not known. The United States is the largest consuming country of pipe and boiler coverings in the world. Some of the domestic product is exported, but most of it is consumed in this country. Manufacturing capacity is adequate for present needs, and a shortage in these articles could be caused only by a deficiency in asbestos, the supply of which comes chiefly from Canada.

Domestic exports.—Statistics are not available for exports of pipe and boiler coverings, as these articles are not separately listed by customs officials. In the calendar year 1919 the total exports of all kinds of manufactures of asbestos amounted in value to $3,531,978, the product going to many foreign countries, chief among which were Canada, Cuba, and Mexico.

FOREIGN PRODUCTION.

The United Kingdom and Germany are the largest foreign producing countries of asbestos products (among which are asbestos pipe and boiler coverings), smaller quantities being produced in

[13] From "Asbestos," published by the Secretarial Service, Philadelphia, May, 1920.

France and Italy. The annual output of the United States, however, far surpasses that of either of these countries. Magnesia is made in England only from dolomite. The output is comparatively small and the prices are about the same as those obtaining in this country. Germany is situated fairly favorable as regards magnesia supplies owing to the production of magnesium salts as a by-product of potash manufacture.

IMPORTS.

Separate statistics of imports of the above mentioned articles are not compiled by American customs officials. The amounts are included under "All other manufactures of asbestos," which embrace all imports of manufactures of asbestos other than yarn and woven fabrics.

In the calendar year 1919 "All other manufactures of asbestos" were imported to the value of $69,565, the bulk of which came from England. Imports in 1920 were on a much larger scale.

PRICES.

Asbestos and composition pipe and boiler coverings are sold at discounts from the 1907 pipe-covering price list. Asbestos cements are sold by weight, there being no standard list price. Asbestos felt is sold at discounts from the 1907 asbestos felt price list.

In 1920 the discount on asbestos air-cell pipe covering was 40 per cent until May, after which it stood at 35 to 40 per cent during the remainder of the year.

Discounts in 1920 on 85 per cent magnesia coverings ranged from 5 to 12½ per cent from "list" during the four months from February to May; from 5 to 15 per cent in June to October; and from 10 to 20 per cent from "list" in November and December.

Prices of asbestos cement in 1920 ranged from $1.75 to $3 a bag of 100 pounds.

TARIFF HISTORY.

Asbestos and composition pipe and coverings have never been specifically mentioned by name in any tariff act.

COMPETITIVE CONDITIONS.

Great Britain and Germany are the largest foreign producing countries of asbestos articles. These countries are not selling pipe and boiler coverings in the American market to any considerable extent, and severe competition from Great Britain and Germany with the domestic product in this country is not expected. Manufacturers in the United States are largely dependent upon foreign sources for supplies of raw asbestos. However, Great Britain is entirely dependent on imports of this mineral and the deposits in Germany are not sufficient to supply the needs of German manufacturers.

America's foreign supply comes mainly from Canada and the rest from Rhodesia and South Africa. Nearly all the Canadian production is consumed in the United States; in 1918, more than 95 per cent of the total Canadian production was sold here. Great Britain having no asbestos deposits in the British Isles, imports practically

all this raw material from Rhodesia and South Africa; Germany also receives its foreign supplies from these sources.

Rhodesian and South African asbestos are known for their long fiber, and are used chiefly in the manufacture of spun asbestos articles, whereas the greater part of Canadian asbestos is of short fiber, not suited for spinning. Long asbestos fiber finds little use in the manufacture of pipe and boiler coverings because of its greater cost. For that reason Canadian asbestos is mostly employed in the production of these articles. Blue asbestos (crocidolite) is also somewhat used, particularly in England.

Freight on asbestos raw material from Canada to Great Britain and Germany, plus freight on the finished product, practically prevents much sale of pipe and boiler coverings in the United States from these countries.

In European countries there is considerable use of an asbestos covering which resembles rope. This is wrapped around pipes. Formed coverings, which are more cheaply applied and at least equally efficient, are almost exclusively used in the United States.

Asbestos and magnesia pipe covering—1907 list price, per linear foot.

[Data from the Franklin Manufacturing Co., Franklin, Pa.]

Pipe sizes.	¼ to 1½ inch.	1½-inch.	2-inch.	1¾ to 3 inch.	3-inch.
¼ inch	$0.22	$0.46	$0.75	$0.65	$1.20
½ inch	.24	.49	.80	.70	1.35
1 inch	.27	.52	.85	.75	1.40
1¼ inches	.30	.56	.90	.80	1.45
1½ inches	.33	.60	.95	.85	1.55
2 inches	.36	.64	1.00	.90	1.65
2½ inches	.40	.70	1.05	1.00	1.75
3 inches	.45	.76	1.15	1.10	1.90
3½ inches	.50	.82	1.25	1.20	2.0o
4 inches	.60	.88	1.35	1.40	2.20
4½ inches	.65	.94	1.45	1.50	2.35
5 inches	.70	1.00	1.55	1.60	2.50
6 inches	.80	1.10	1.70	1.80	2.70
7 inches	1.00	1.20	1.85	2.25	2.90
8 inches	1.10	1.35	2.00	2.50	3.15
9 inches	1.20	1.50	2.20	2.70	3.40
10 inches	1.30	1.65	2.40	2.90	3.65
12 inches	1.85	1.85	2.70	4.10	4.10
14 inches	2.10	2.10	3.00	4.60	4.60
16 inches	2.35	2.35	3.30	5.10	5.10
18 inches	2.60	2.60	3.60	5.60	5.60
20 inches	2.85	2.85	4.00	6.00	6.00
24 inches	3.30	3.30	4.50	7.00	7.00
30 inches	4.00	4.00	5.50	8.40	8.40

Asbestos and magnesia blocks and lagging—1907 list price, per square foot.

[Data from the Franklin Manufacturing Co., Franklin, Pa.]

Thickness.	Price.	Thickness.	Price.
½ inch	$0.30	2½ inches	$0.64
⅝-inch	.30	2⅝ inches	.68
¾-inch	.30	2¾ inches	.72
1-inch	.30	2⅞ inches	.75
1⅛ inches	.34	2⅞ inches	.79
1¼ inches	.38	2¾ inches	.83
1⅜ inches	.42	2⅞ inches	.87
1½ inches	.45	3 inches	.90
1⅝ inches	.49	3½ inches	.98
1¾ inches	.53	3½ inches	1.05
1⅞ inches	.57	3¾ inches	1.13
2 inches	.60	4 inches	1.20

Asbestos felt—1907 list price, per square foot.

[Data from the Franklin Manufacturing Co., Franklin, Pa.]

Thickness.	Price.	Thickness.	Price.	Thickness.	Price.
One-ply:		Two-ply:		Three-ply:	
1/16 inch	$0.12½	1 inch	$0.50	2 inches	$1.00
1/8 inch	.15	1⅛ inches	.65	2¼ inches	1.15
3/16 inch	.20	1¼ inches	.70	2½ inches	1.20
¼ inch	.25	1⅜ inches	.75	2¾ inches	1.25
5/16 inch	.30	1½ inches	.80	2⅞ inches	1.30
3/8 inch	.35	1⅝ inches	.85	2⅞ inches	1.35
7/16 inch	.40	1¾ inches	.90	2⅞ inches	1.40
½ inch	.45	1⅞ inches	.95	2¾ inches	1.45
				3 inches	1.50

Asbestos and composition pipe and boiler coverings—Discounts from standard price list paid by consumers in 1920.

[Asbestos, published monthly at Philadelphia, Pa.]

Months.	4-ply asbestos air cell pipe covering.	85 per cent magnesia pipe covering.	Months.	4-ply asbestos air cell pipe covering.	85 per cent magnesia pipe covering.
	Per cent.	*Per cent.*		*Per cent.*	*Per cent.*
January	40	10	July	35–40	5–15
February	40	5–12½	August	35–40	5–15
March	40	5–12½	September	35–40	5–15
April	40	5–12½	October	35–40	5–15
May	40	5–12½	November	35–40	10–20
June	35–40	5–15	December	35–40	10–20

Asbestos cement—Average market prices, per hundredweight, paid by consumers.

[Data from Asbestos, published monthly at Philadelphia, Pa.]

Months.	1920	Months.	1920	Months.	1920
January	$2.00	May	1.75@3.00	September	1.75@3.00
February	1.75@3.00	June	1.75@3.00	October	1.75@3.00
March	1.75@3.00	July	1.75@3.00	November	2.50@3.00
April	1.75@3.00	August	1.75@3.00	December	2.50@3.00

Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty.
1883	39	Asbestos, manufactured	25 per cent ad valorem.
1890	459	Manufactures of * * * asbestos, * * * or of which these substances or either of them is the component material of chief value, not specially provided for in this act.	Do.
1894	351	....do	Do.
1897	448	....do	Do.
1909	462	Manufactures of * * * asbestos, * * * or of which these substances or any of them is the component material of chief value, not specially provided for in this section.	Do.
1913	367	....do	10 per cent ad valorem.

ASBESTOS SHINGLES, SLATES, WOOD, OR LUMBER.

General Information.

TARIFF PARAGRAPH, ACT OF 1913.

PAR. 367. Manufactures of * * *, asbestos, * * *, or of which these substances or any of them is the component material of chief value, not specially provided for in this section, 10 per cent ad valorem.

DESCRIPTION.

Asbestos shingles, slate, wood, or lumber are made from short asbestos fiber mixed with hydraulic cement, the asbestos forming about 15 per cent of the product by weight. These products are known for their extreme durability and fire-resisting qualities. The shingles are of various shapes and colors, made in sizes from 4 by 8 inches to 16 by 16 inches and in different thicknesses. The kind in most common use is 8 inches wide, 16 inches long, and $\frac{1}{8}$ inch thick. Heavier shingles, tapered shingles with rough texture surface, and colored shingles are made chiefly for artistic effect or to imitate slate.

Uses.—Asbestos shingles and slate are suitable for use wherever roofing material is required or employed. Asbestos lumber is used largely in making fireproof walls, doors, and partitions; as a fire stop in floors; in electrical work to safeguard against fires from electric wires; for deflectors, division plates, and barriers where an electric arc is liable to form; for lining controllers, flue boxes, and various safety devices; in electric flatirons and other electric heating devices.

Substitutes.—Asbestos roofing in sheets and rolls, tin; sheet iron; galvanized iron; corrugated iron, and numerous sheet roofings made from various compounds, and roofing materials claimed by the inventors to be fireproof are competing articles and substitutes for asbestos shingles. Metal sheets of various kinds are frequently used in place of asbestos wood or lumber.

DOMESTIC PRODUCTION.

In 1920 asbestos shingles, slates, wood, or lumber were manufactured in the United States by 14 concerns.

The amount and value of the total annual production are not known. The industry has grown rapidly in recent years, due to a wider knowledge of the products and to the increase in the number of their uses since their first introduction into the United States in 1907.

Raw materials.—The materials employed are hydraulic cement and asbestos fiber, in proportions of about 85 per cent cement and 15 per cent asbestos. Cement is made in large quantities, from domestic materials, in this country; comparatively small quantities are annually imported. The asbestos employed is mostly imported from Canada,

only comparatively small quantities of domestic origin being obtainable. Both these articles enter the United States free of duty.

Equipment.—Machines in use are largely automatic. Only a small amount of hand labor is required to produce the finished article. Labor is chiefly employed to handle the raw materials and finished products.

In this industry there is practically the same use of machinery in foreign countries as in the United States.

Methods of production.—Two distinct processes for making asbestos shingles—one American, the other Austrian—are now in use. In both high compression is necessary.

American method.—In the American process the shingles are rolled. The mixed dry material—asbestos fibers and cement—is automatically fed from a hopper to a traveling belt, evenly distributed and combed out before passing between rolls. The machine is automatic. Its operation, for example, when finished slabs of fiber concrete three-sixteenths of an inch thick are desired is as follows: The hopper gate is adjusted and the picker rolls arranged so that the feed of material and the combing and leveling operation of the picker rolls deliver a band or layer of material about three-fourths of an inch thick to the traveling belt. The pressure exerted by the rolls is so adjusted that a layer of material passing between the rolls is compacted, while still dry, to about one-half (three-eighths inch) its original depth. This compression gives the layer of material sufficient consistency to enable it to be projected across a slight gap to a belt on the "wet" part of the machine. After thus leaving the "dry" division of the machine, the layer of dry compressed material is supplied from a vibrating sprinkler pipe with water, which penetrates all parts of the layer before the material reaches a second set of pressure rolls. These pressure rolls in the "wet" division of the machine are so adjusted as to compress the wet layer of material to a thickness of three-sixteenths of an inch. Slabs or sheets of sizes desired for the finished shingles are automatically cut from the layer. The sheets of fiber concrete then are stacked up, with metal sheets between the layers, in presses to dry. The pressure applied is from 8,000 to 10,000 pounds to the square inch and firmly unites the composition.[1]

Austrian method.—The Austrian process makes use of a cardboard machine. The asbestos, which preferably is previously disintegrated in an edge mill, is subjected to treatment in a mixing machine until sufficiently broken up—that is, until the fibers are separated as much as possible. Then the required proportion of hydraulic cement is gradually added and the entire bulk mixed thoroughly. This mixture flows immediately into a vessel with a stirring device, where it is diluted with five to six times the quantity of water while being continuously agitated or stirred. From this vessel the thin paste is conveyed to the cardboard-making machine, to obtain a cardboard-like product. The thin paste is carried to and on an endless rotating porous fabric, through which the water of the thin paste or pulp flows off, leaving on the upper side the hydraulic cement intermixed with asbestos as a thin layer. This layer is then conducted to a roller, which removes the layer from the endless fabric and rolls it up. Thus

[1] From U. S. Letters Patent No. 979547, granted to Chas. L. Norton, Hudson, N. H., Dec. 27, 1910.

a sheet is formed composed of several superimposed layers, the number of layers corresponding to the number of rotations of the roller. As soon as the product has reached the desired thickness it is cut to size and pressed to shape.[2]

Geographical distribution.—According to Thomas's Register of Manufacturers, asbestos shingles, slates, wood, or lumber were manufactured in 1920 by 14 concerns—2 in New Hampshire, 1 in Massachusetts, 2 in New York, 2 in New Jersey, 1 in Rhode Island, 2 in Pennsylvania, 1 in Ohio, 2 in Illinois, and 1 in Wisconsin.

History of the industry.—The first invention for the manufacture of these articles was by Ludwig Haschek, an Austrian. The products were manufactured for a number of years in Europe before being made in the United States in 1904. In 1910 an American, Charles L. Norton, invented a process for making fibrous sheets of cement and asbestos.

Domestic production and consumption.—The amount and value of the total domestic output and consumption are not known. American manufacturing capacity is adequate to supply the domestic demand, and a shortage of the product is only possible through the failure to obtain sufficient supplies of asbestos, the bulk of which must be imported.

Domestic exports.—Statistics of imports of the articles mentioned in this survey are not separately compiled by United States customs officials, but are included with figures showing total exports of all kinds of asbestos manufactures.

FOREIGN PRODUCTION.

Canada is the principal foreign country selling asbestos shingles and asbestos lumber in the American market. The Canadian product, which is made by one factory, is equal in quality to the product manufactured in this country, but the Canadian industry is small.

IMPORTS.

Separate statistics of imports of asbestos shingles, slates, wood, or lumber are not compiled by the United States customs officials, and little is known, except that imports are not considerable, regarding the quantity annually received from foreign countries. It is probable that most, if not all, of these imported articles come from Canada, where only small quantities are produced.

PRICES.

In 1920 the catalogue prices of a popular brand of gray asbestos shingles, f. o. b. factory, ranged from $1.60 per hundred for 4 by 8 inch size to $11.50 per hundred for 16 by 16 inch size. Prices for veneered shingles were quoted from about 25 to 33⅓ per cent higher, and colored shingles from 56 to 66⅔ per cent higher than gray shingles. Asbestos building lumber was quoted from 15 cents a square foot for sheets one-eighth inch thick to $1.20 a foot for sheets 1 inch thick, with a liberal discount (not stated) on quantity lots.

[2] From U. S. Letters Patent No. 12594, granted to Ludwig Hatschek, Austria-Hungary, Jan. 15, 1907.

TARIFF HISTORY.

Asbestos shingles, slates, wood, or lumber have never been specifically mentioned in the tariff acts.

COMPETITIVE CONDITIONS.

The only competitor in the American market at this time is Canada, which country is well supplied with raw material, located just across our border. At present (1921) there is but one factory in Canada engaged in the manufacture of asbestos shingles and asbestos wood or lumber. This factory is controlled by American interests.

With available small supplies of domestic asbestos near at hand and large supplies in Canada, American manufacturers had a considerable advantage over European manufacturers, either in Great Britain or on the Continent, who must import their asbestos material. American manufacturers can obtain their material practically as cheaply as can the European producers, and in order to sell in the American market European manufacturers are required to meet the additional expense of transatlantic freight on the heavy finished product.

Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883....	39	Asbestos, manufactured	25 per cent ad valorem.
1890....	459	Manufactures of * * * asbestos, * * * or of which these substances or either of them is the component material of chief value, not specially provided for in this act.	Do.
1894....	351	....do.	Do.
1897....	448	....do.	Do.
1909....	462	Manufactures of * * * asbestos, * * * or of which these substances or any of them is the component material of chief value, not specially provided for in this section.	Do.
1913....	367	....do.	10 per cent ad valorem.

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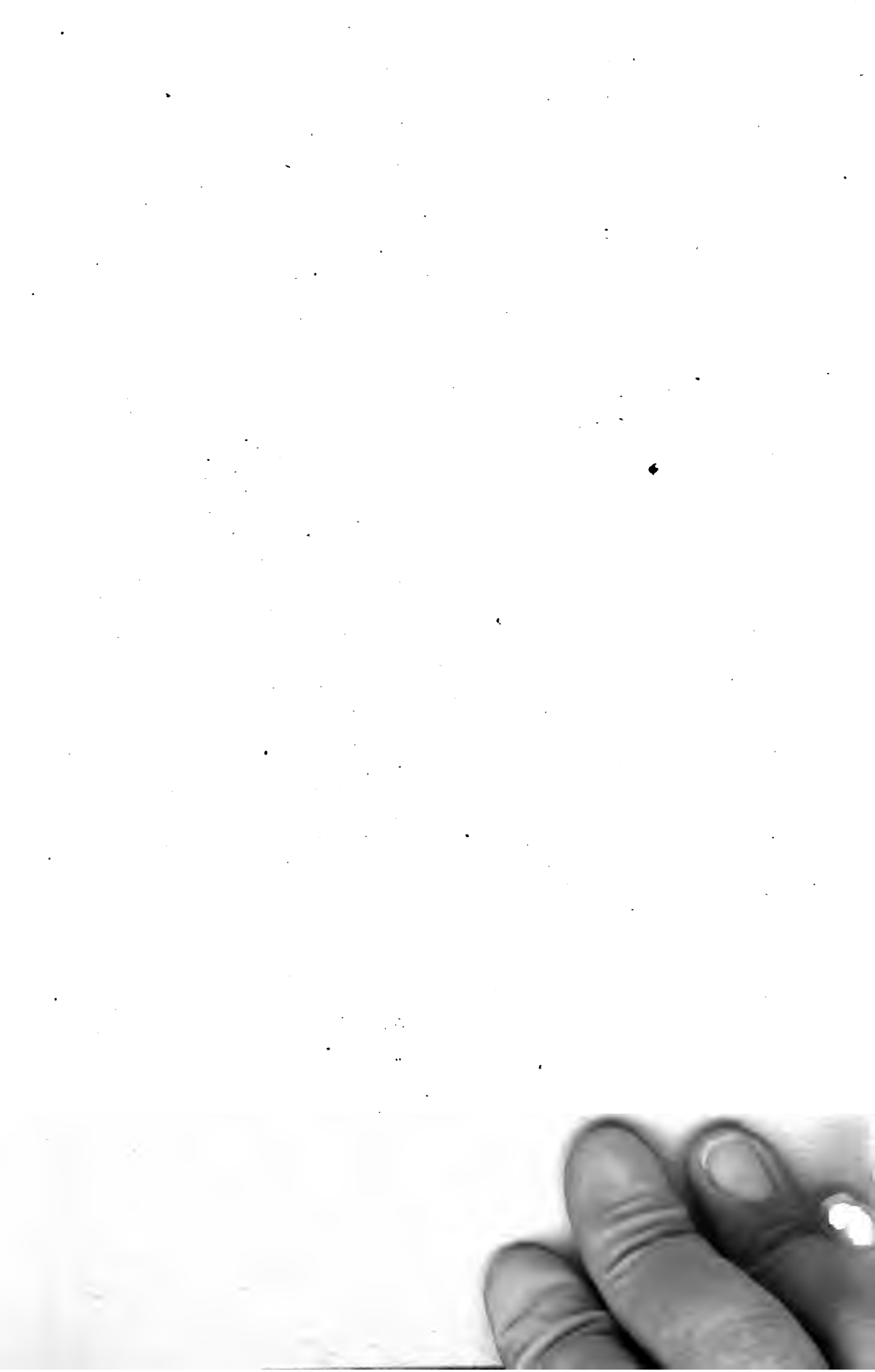

UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPH 366 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

Paragraph 366:
Manufactures of Catgut, Whip Gut, or Worm Gut

Paragraph 367:
Manufactures of—
Amber (see also par. 36)
Bladders
Wax (see also pars. 412 and 641)
(For treatment of asbestos and yarn and woven fabrics of asbestos, see par. 367, N-20.)

Paragraph 419:
Bladders, Integuments, Tendons, and Intestines of Animals and Fish Sounds, Crude

Paragraph 443:
Catgut, Whip Gut, or Worm Gut, unmanufactured

Paragraph 496:
Goldbeaters' Molds and Skins

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this, industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and index" the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Guy G. George and Joseph M. Donohoe, of the Commission's staff, and of others.

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CATGUT, WHIP GUT, OR WORM GUT.

SUMMARY.

The term catgut is derived from kitgut, an old term for violin gut. Catgut is made almost invariably from the intestines of sheep, never from the intestines of cats.

The crudest form in which catgut is known to the trade is a manufactured string; that is, it is not fresh gut, dried gut, or salted gut, which are the only crude or unmanufactured forms of sheep gut, but it is a string made by twisting together strands of intestines which have been cleansed and otherwise treated.

Catgut has been imported almost wholly under the free list as unmanufactured catgut (par. 443), simply because the strings are imported in the crudest form in which catgut is known to the trade. Thus, tennis gut, unsterilized surgical gut, spinning gut, catgut rope, and catgut in bundles cut to certain lengths, but which require further treatment before being salable as strings for musical instruments, have been imported under the free list. These strings are not raw, dried, or salted gut strings, but are in reality manufactured gut strings.

The value of domestic products of the gut-string industry is not given in the census statistics. However, based upon the reports of individual manufacturers, the annual value of products of the industry may possibly reach a total of $2,000,000 or more at the present time. It is a comparatively new industry, having been developed mainly since 1912. The imports of manufactured catgut reached a total of $68,003 in 1915, the highest total since the year 1910; and the imports of unmanufactured catgut reached a total of $328,796 in 1919, the highest total since the year 1910. Chicago is the center of the industry in the United States.

The wholesale price of German music strings laid down in this country before the war was 60 to 80 cents a bundle, while the cheapest price of American music strings was about $1.25 to $1.50. The present American cost of manufacture of a bundle of strings is given as about $2.75.

The price of 1,000 feet of No. 2 surgical catgut before the war was $2.50 for both the American and imported. The present price for American surgical catgut is $14, while some German catgut is now (spring of 1920) being received at a contract price of $7.50.

One of the leading American manufacturers states that the labor cost represents about 55 per cent of the total and the material cost about 45 per cent of the total. The manufacturers assert that the cost of raw material has increased about 500 per cent and the cost of labor about 200 per cent since the beginning of the war. One manufacturer thinks that the German string maker has little or no advantage in the price of the raw material, but that the cost of labor is much less.

Foreign string makers purchased at least a part of their material in this country before the war. The Tariff Commission has recently been advised that a German string maker has contracted with one of the packers for practically their entire output of spinners, or narrow sheep casings, which he expects to have dried, sent to Germany, and after being manufactured returned to this country as violin and surgical gut. The price paid for this material is not known.

The American manufacturer is asking for: A revision of classification, to make all gut strings dutiable; a higher duty on all gut strings; a high duty on "oriental" tennis gut, which is not made from intestines, but from animal sinews, silk, and glue.

The manufacturer of surgical sutures desires a duty on prepared surgical sutures.

Summary table—Catgut.

Year.	Imports for consumption (free).[1]	Imports for consumption (dutiable).[2]	Amount of duty.
1910	$148,670	$11,797	$2,949
1911	153,835	4,096	1,024
1912	131,249	4,878	1,220
1913	139,125	3,427	857
1914	123,551	139,344	27,877
1915	198,081	136,954	27,391
1916	253,678	62,443	12,488
1917	316,491	27,136	5,426
1918	216,810	22,332	4,466
1919	328,796	36,210	7,242
1920	172,662	34,527	6,905
1920 [3]	307,214	65,454	13,091

[1] Unmanufactured.
[2] Manufactures of catgut, including strings for musical instruments under act of 1913.
[3] Calendar year.

General Information.

1913 TARIFF PARAGRAPHS.

366. Manufactures of catgut, or whip gut, or worm gut, including strings for musical instruments; any of the foregoing or of which these substances or any of them is the component material of chief value, not specially provided for in this section, 20 per cent ad valorem.

443. Catgut, whip gut, or worm gut, unmanufactured, free.

DESCRIPTION AND USES.

The term "catgut" is applied to gut strings prepared from animal intestines, generally those of sheep, more rarely those of the horse, ass, and mule, but never those of the cat.

The intestines are first thoroughly cleaned and freed from fatty substances and then steeped in water for several days, after which the external membrane is scraped off with a blunt knife. The scraped intestines are steeped and scraped again, after which they are steeped for some time in an alkaline solution, and then drawn through a perforated brass thimble. They are next subjected to the antiseptic action of the fumes of burning sulphur. Finally they are sorted and made into strings or split into strands which are made into strings.

The strings are put to many uses. The highest quality strings are used as strings for musical instruments and for making surgical ligatures, used by surgeons in closing wounds. Catgut is also used for cloakmakers' cords, hatters' cords, the whip gut of commerce, and cords for tennis rackets. The Italian violin string is generally regarded as the best violin string obtainable, although the American string has been highly praised by leading violinists. American manufacturers supplied great quantities of surgical ligatures to the armies during the war.

Worm gut, or silkworm gut, is the fine strong fiber employed by anglers in attaching their hooks. It is obtained from the silkworms by taking them before they begin to spin and very carefully pulling them asunder. The glutinous silk contained in the silk glands is then drawn into a single thread and gently dried. Small quantities are imported annually from Italy.

"Oriental" gut, used in stringing the cheaper tennis rackets, is made from the sinews of animals, combined with silk and glue.

Surgical sutures might be defined as gut strings in their natural condition or tanned to render them more slowly absorbable in the body tissues, either sterilized, partly sterilized, or put up in glass tubes, jars, or containers, paper envelopes, or containers of tin foil, or other substances, ready to be subjected to sterilizing procedures to render them susceptible to use as surgical ligatures or sutures. The quality of this product determines its cost to a large extent, and the consumer would no doubt be interested in preventing a tendency to undersell this product with a cheaper imported article of poorer quality.

DOMESTIC PRODUCTION.

Machinery plays only a small part in the manufacture of gut strings, practically all work being done by hand labor. The supply of raw material, which is a by-product of the packing industry, is large. After cleaning and scraping, the intestines are split into strands, the smooth parts entering into the highest grade strings, while the rough parts, to which the supporting membrane of the intestines was attached, are used in making coarser and larger strings. The size of the string depends upon the size and number of strands twisted together. The strands are attached to a stationary point at one end and to a wheel at the other. Turning the wheel twists the strands together. This string then becomes the catgut of commerce.

There is not a great deal of information available as to the size and character of the organizations manufacturing gut strings, but it is obviously an industry which may be handled on a small scale as well as on a large scale. At least two of the large Chicago packers are engaged in the manufacture of gut strings for various uses. Other manufacturers buy catgut or surgical catgut, which is their raw material for the manufacture of surgical ligatures. The highest grade string is required for surgical ligatures and their manufacture requires special laboratories and highly trained men.

The manufacture of gut strings is a comparatively new industry in the United States. One of the largest manufacturers started his factory in 1912. It has been stated by several string makers that 80 to 90 per cent of the gut strings used in the United States before

the war were imported. The industry has grown rapidly since the beginning of the war, probably as a result of the greater demand for surgical ligatures. It should be noted that imports increased during this period, although the increase in price would indicate a smaller increase in volume than in value.

FOREIGN PRODUCTION.

Germany, England, Scotland, and Japan appear to be the principal countries exporting to the United States. European countries have the advantage of experienced labor in the manufacture of gut strings, and possibly the advantage of cheaper labor. The quality of the product of German, Italian, and Swiss manufacturers has generally been considered superior for many purposes to that of the American.

Competition from foreign string makers is feared by the American manufacturers. Before the war 80 to 90 per cent of the gut strings used in this country were made abroad. The Tariff Commission has recently been informed that a German string maker has contracted for practically the entire output of narrow sheep casings of one of the large packers, which he intends to have sent to Germany to be manufactured and then returned to this country as an imported article. This practice was common before the war, and if it is resumed it appears that the domestic manufacturer will have very active competition to meet.

IMPORTS.

The total importation of manufactures of catgut was $62,907 in 1914, which was a great deal higher than previous years, the total for 1913 being only $3,417. Germany and Japan furnished $50,000 of the 1914 importation.

Imports of unmanufactured catgut reached a total of $153,779 in 1911, but declined to $122,733 in 1914. In 1914 the principal nations exporting to the United States were Japan, Germany, England, Scotland, Spain, France, and Italy, in the order named.

Imports by countries are not stated separately after 1914. The average annual value of imports, excluding musical instrument strings, entered under the dutiable list, excepting the years 1914 and 1915, was less than $10,000. The value in 1914 was $62,399, and in 1915, $68,003. In 1919 and 1920 imports amounted to $14,446 and $8,041, respectively. Imports entered for consumption under the free list have increased since 1914, when the total was $123,551. In 1917 the total was $316,491, but declined somewhat in 1918, the total for the year being $216,810. In 1919 and 1920 imports amounted to $328,796 and $172,662, respectively.

Strings for musical instruments made of gut were first separately stated in 1914. In that year imports were valued at $76,778, the highest. Imports for the year 1920 were valued at $26,486.

PRICES.

The first known shipment of catgut from Germany since the war was received in April, 1920. The contract price agreed upon for this and subsequent regular shipments for a stated period in American dollars was $7.50 for 1,000 feet of No. 2 surgical catgut. The present

price of American catgut is $14. Before the war the American price was the same as the German, $2.50.

One of the principal American manufacturers states that their cheapest prewar price on music strings was $1.50 a bundle of 30 strings, while the German strings were laid down in this country at 60 cents to 80 cents a bundle. The present catalogue prices on American strings range from $3 up for a bundle of 30 strings, the different prices depending upon the length and quality of the strings.

TARIFF HISTORY.

Strings for musical instruments were not included in the paragraph with manufactures of catgut until the act of 1913. In 1894 a duty of 25 per cent ad valorem was imposed on strings for musical instruments. This was increased under the act of 1897 to 45 per cent ad valorem, and was retained at that rate in the act of 1909. The act of 1913 included strings for musical instruments with manufactures of catgut, and reduced the duty to 20 per cent ad valorem.

Manufactures of catgut, whip gut, or worm gut were made subject to a duty of 25 per cent ad valorem by the act of 1894, and remained at this rate until the act of 1913, which lowered it to 20 per cent ad valorem. Until the act of 1913 manufactures of catgut were subject to the same duty of 25 per cent ad valorem since the act of 1883.

The act of 1894 enumerated unmanufactured catgut, not further manufactured than in strings or cords, on the free list. They were also so enumerated by the act of 1890. In 1897 the qualifying clause was omitted, and "catgut, whip gut, or worm gut, unmanufactured," has remained in this form on the free list since that date.

COMPETITIVE CONDITIONS.[1]

Foreign production of gut strings is carried on to some extent by family labor, although factories are also maintained. Succeeding generations of families have made strings, and thus foreign labor has become highly skilled. Before the war foreign labor was also much cheaper than American labor, but no accurate information on foreign labor costs in this industry in 1920 is available.

Domestic labor costs are said to have increased from an average of 17½ cents an hour before the war to as high as 46⅔ cents an hour at the present time. Manufacturers represent that the cost of raw material has increased from as low as ½ cent per 8-yard length of sheep and lamb intestines to as high as 5½ cents per 8-yard length. One manufacturer states that the cost of making a bundle of violin strings has increased from $1.20 before the war to $2.75 at the present time.

The domestic industry is a comparatively new one and has developed principally since the beginning of the war. One manufacturer's factory space has been increased 600 per cent since the beginning of the war. Another states that the industry has increased at least fivefold since the war removed foreign competition.

Before the war 80 to 90 per cent of the gut strings used in this country was imported. The American manufacturer was undersold and the leading string makers anticipate destructive competition

[1] This discussion is based largely upon correspondence received by the Tariff Commission.

again in the very near future unless protected by a high duty. American producers assert that before the war German string makers were able to buy raw material in this country and after manufacturing it abroad return it as a manufactured article at a price which was less than the domestic cost of production. The Tariff Commission has been informed that a German string maker has recently contracted for the output of raw material of one of the large packers, which he will send to Germany to be manufactured and returned to this country.

TARIFF CONSIDERATIONS.

The American gut string makers are asking that the classification be changed, so that only fresh, dried, or salted intestines be allowed to enter under the free list, and so that all other strings made of gut, which they hold are manufactured strings, be made subject to duty.

"Oriental" gut, which is not manufactured in this country, but which is imported from Japan, is made of animal sinews, silk, and glue, and enters free of duty. It is used for stringing tennis rackets, but is used only on the cheaper rackets. The price of a coil of this string which is sufficient to string a racket is given as 30 to 35 cents. The manufacturer states that the cost of sufficient tennis gut to string a racket is about $1.20. The manufacturer is asking for a higher duty on "oriental" gut.

Surgical catgut now enters free of duty, since it is the raw material for surgical ligatures or sutures. Manufacturers of sutures say that the quality of imported catgut has been superior for their purposes, and that a duty on this material will have the effect of raising the price of their product to the hospitals and doctors without improving the quality. On the other hand, the manufacturers state that catgut may be imported as surgical catgut free of duty, and then be used as strings for musical instruments.

Surgical sutures are a manufactured product not now separately stated in the tariff act. The quality of the product largely determines its cost. While there is no evidence of imports of any consequence, it seems quite probable that sutures might be manufactured abroad as well as catgut at a lower cost than in this country. Perhaps the most dangerous element of competition would be the attempt to import a poorer quality of sutures at a cheap price and call them just as good as the American. This the consumer would certainly object to.

A reclassification which will draw a clear distinction between manufactured and unmanufactured gut strings seems to be desirable. A duty on "oriental" gut, as well as on all manufactured gut strings, would be in line with the policy of assessing duties on manufactured articles. Surgical sutures appear to deserve separate statement as a manufactured article.

Costs and prices.—According to the statements of two of the leading string makers, labor costs have increased about 200 to 250 per cent since the beginning of the war, or from 17½ cents to 46⅔ cents an hour in one case, and from 17 cents to 43½ cents in the other case; while raw material has increased in cost about 500 per cent, or from ½ cent to 6½ cents per 8-yard length of sheep intestines in one case, and from 1 cent to 5½ cents in the other case.

One of these manufacturers, however, states that the total manufacturing cost of a bundle of violin strings has increased from $1.20 to $2.75, which is an increase of only 129 per cent; while the other gives the increase as 95 cents to $2.87, which is an increase of about 200 per cent. The increase in the cost of manufacturing these strings has not been nearly so large in either case as the reported increase in the labor and material costs.

One of the manufacturers of surgical sutures states that the domestic price of catgut has increased six times since the beginning of the war, while another gives the increase of 1,000 feet No. 2 surgical catgut as 460 per cent, or from $2.50 to $14. In this case it appears that the increase in the price of the product has been greater than the increase of the principal costs entering into its manufacture.

The increase in the price of surgical catgut from Germany has been only from $2.50 to $7.50, or 200 per cent. (The present price of $7.50 in this case is not a conversion from marks, the goods being delivered in terms of dollars.)

One string maker, who is asking for a high duty, states that "we do not believe that German string manufacturers can secure raw material any cheaper than we can, but the labor situation is one on which we can not possibly compete * * *."

If the cost of raw material to the German maker has increased as much as to the American maker, and it is also freely admitted that German labor costs have advanced materially, it would hardly seem possible that there should exist such a wide difference in the present German and American price, based wholly upon the manufacturing costs.

Imports by countries (fiscal years).

MANUFACTURES OF CATGUT, OR WHIP GUT, OR WORM GUT.[1]

Imported from—	1910	1911	1912	1913	1914
France	$75	$375	$62	$87	$1,111
Germany	103	69	474	76	28,647
Italy	18	20	.....	.....	1,412
England	7,039	2,202	2,974	1,179	6,941
Scotland	4,693	1,119	654	80	811
Japan	257	353	637	1,984	22,062
All other	85	47	99	11	1,923
Total	12,270	4,185	4,900	3,417	62,907

CATGUT, WHIP GUT, OR WORM GUT, UNMANUFACTURED.[1]

France	$1,814	$1,279	$5,428	$5,211	$9,128
Germany	31,697	32,344	33,931	33,484	21,546
Italy	7,383	7,558	5,492	2,708	7,746
Spain	5,748	3,929	5,359	6,056	10,045
Switzerland	1,239	357	412	338	94
Turkey in Europe	1,431	.....	3,289	2,046	.....
England	32,064	25,016	20,853	24,412	18,011
Scotland	24,397	23,640	17,756	16,742	14,357
Japan	42,813	57,679	38,760	46,996	41,791
Turkey in Asia	.....	1,524	1,459	.....	.....
All other	517	453	190	1,127	15
Total	149,103	153,779	132,929	139,120	122,733

[1] Included in "All other articles" after 1914.

Imports for consumption—Revenue.

CATGUT, UNMANUFACTURED.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duties collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				
1908	Free		$114,706			
1909	do		128,464			
1910	do		148,670			
1911	do		153,835			
1912	do		131,249			
1913	do		139,125			
1914	do		123,551			
1915	do		198,061			
1916	do		253,678			
1917	do		316,491			
1918	do		216,810			
1919	do	24,813	328,796		$13.25	
1920	do	23,197	172,662		7.44	
1920[4]	do	40,215	307,214		7.64	
1921[5]	do	24,304	146,258		6.02	

MANUFACTURES OF CATGUT, OR WHIP GUT, OR WORM GUT, N. E. S.

						Per cent.
1907	25 per cent ad valorem.		$64,513	$16,128		25
1908	do		84,790	21,197		25
1909	do		66,326	16,581		25
1910	do		11,796	2,949		25
1911	do		4,096	1,024		25
1912	do		4,878	1,219		25
1913	do		3,426	856		25
1914	do[1]		167	41		25
1914	20 per cent ad valorem.[2]		62,399	12,479		20
1915	do		68,003	13,600		20
1916	do		9,790	1,958		20
1917	do		4,867	973		20
1918	do		8,602	1,720		20
1919	do		14,446	2,889		20
1920	do		8,041	1,608		20
1920[4]	do		15,634	3,127		20
1921[5]	do		9,352	1,870		

CATGUT—STRINGS FOR MUSICAL INSTRUMENTS.

						Per cent.
1914	20 per cent ad valorem.		$76,778	$15,355		20
1915	do		68,951	13,790		20
1916	do		52,653	10,530		20
1917	do		22,269	4,453		20
1918	do		13,730	2,746		20
1918[3]	20 per cent less 20 per cent.		25	4		16
1919	20 per cent		21,764	4,353		20
1920	do		26,486	5,297		20
1920[4]	do		49,820	9,964		20
1921[5]	do		40,742	8,148		20

[1] Under the act of 1909.
[2] Under the act of 1913.
[3] From Cuba (reciprocity treaty, Dec. 27, 1903).
[4] Calendar year.
[5] 6 months ended June 30, 1921.

Catgut—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	488	Strings: All strings of catgut, or any other like material, other than strings for musical instruments.	25 per cent ad valorem.
	671	Catgut strings, or gut-cord, for musical instruments	Free.
	672	Catgut or whip-gut, unmanufactured	Do.
	714	Gut, and worm gut, manufactured or unmanufactured	Do.
	431	Catgut, whipgut, or wormgut, unmanufactured, or not further manufactured than in strings or cords.	Do.

Catgut—Rates of duty—Continued.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1890	459	Manufactures of * * * cat-gut or whip-gut or worm-gut, * * * or of which these substances or either of them is the component material of chief value, not specially provided for in this act.	25 per cent ad valorem.
	529	Catgut, whip-gut, or worm-gut, unmanufactured, or not further manufactured than in strings or cords.	Free.
1894	326½	* * * strings for musical instruments not otherwise enumerated, * * *.	25 per cent ad valorem.
	351	Manufactures of * * * catgut or whip gut or worm gut, * * * or of which these substances or either of them is the component material of chief value, not specially provided for in this act.	Do.
1897	448	Manufactures of * * * catgut or whip gut or worm gut, * * * or of which these substances or either of them is the component material of chief value, not specially provided for in this act.	Do.
	453	* * * strings for musical instruments not otherwise enumerated, * * *.	45 per cent ad valorem.
	517	Catgut, whip gut, or worm gut, unmanufactured.....	Free.
1909	462	Manufactures of * * * catgut or whip gut or worm gut, * * * or of which these substances or any of them is the component material of chief value, not specially provided for in this section.	25 per cent ad valorem.
	467	* * * strings for musical instruments, not otherwise enumerated in this section, * * *.	45 per cent advalorem.
	529	Catgut, whip gut, or worm gut, unmanufactured.....	Free.
1913	366	Manufactures of catgut, or whip gut, or worm gut, including strings for musical instruments; any of the foregoing or of which these substances or any of them is the component material of chief value, not specially provided for in this section.	20 per cent ad valorem.
	443	Catgut, whip gut, or worm gut, unmanufactured.....	Free.

Court and Treasury Decisions.

The terms "catgut" and "whip gut" are often used interchangeably. Whip gut or whipcord is the result of the process of the manufacture of gut into a twisted article. Colored catgut strings twisted and in lengths suitable to be used in stringing tennis rackets were held not dutiable as a manufacture of catgut, but free as unmanufactured. (United States *v.* American Express Co., 6 Ct. Cust. Appls., 36, of 1915.) Strands of gut twisted in the form of a rope or cable and then apparently coated with a light varnish like material are a manufacture of cutgut. (United States *v.* Sheldon & Co., 5 Ct. Cust. Appls., 421, of 1914.)

Colored cutgut strings in lengths suitable for use for stringing tennis rackets were held to come within this provision. The coloring was not a process occurring after the manufacture of the catgut, but pending the manufacture, and the colored article is not a manufacture of catgut. Whip gut or whipcord is the result of the process of the manufacture of catgut into a twisted article which clearly falls within this paragraph. The fact that whip gut, a result of such manufacture, is of a length suitable for use in the manufacture of tennis rackets was held not to remove it from this paragraph, since the record disclosed that this is the length in which whipcord so manufactured is produced in the first instance. (United States *v.* American Express Co., 6 Ct. Cust. Appls., 36, of 1915.) Catgut strings in lengths from 16 to 31 feet, used as material in making clocks and as belting on small lathes, also come within this paragraph rather than paragraph 161 as parts of clocks. (G. A. 8231, T. D. 37914, of 1919.)

Gut for surgical use, for tennis rackets, or for making fishing tackle or parts thereof, might be specified in the law.

MANUFACTURES OF AMBER, BLADDERS, OR WAX.

General Information.

1913 TARIFF PARAGRAPHS.

367. Manufactures of amber, * * * bladders or wax, or of which these substances or any of them is the component material of chief value, not specially provided for in this section, 10 per centum ad valorem; * * *.

419. Bladders, and all integuments, tendons, and intestines of animals and fish sounds, crude, dried, or salted for preservation only, and unmanufactured, not specially provided for in this section, free.

MANUFACTURES OF AMBER AND WAX.

Waxes are used chiefly for the manufacture of candles, floor waxes, and other polishes, insulating compounds, plastic masses, phonograph records, modeling wax, and pharmaceutical preparations.

Amber is used principally in ornaments, beads, pipes, cigar holders, and sometimes in scientific instruments as an insulating material.

Domestic production statistics are not available, as the various articles of which wax and amber are the component materials are shown as the products of their respective industries.

Imports of manufactures of wax averaged about $25,000 prior to 1918. In that year they were valued at $72,606, but declined to $14,994 in 1919. Exports increased from $47,303 in 1911 to $1,382,355 in 1919, and for the first six months of 1920 were valued at $875,000.

Imports of amber manufactures were valued at $9,333 in 1914; $721 in 1918; and at $6,757 for the first half of 1920.

BLADDERS.

Bladders of sheep, hogs, and cattle are dried after eliminating the fat, and used in foreign countries as containers for sausage, lard, and butter. The intestines and integuments are used for sausage casings and other coverings. The swimming bladders or sounds of fish provide isinglass.

Sausage casings are the only item of this classification on which domestic production statistics are available. In 1914 they were valued at $10,146,208, of which $9,077,593 (64,453,298 pounds) were produced as subsidiary products of the meat-packing industry, and $1,068,615 by establishments engaged primarily in their production.

Domestic exports of sausage casings in 1919 amounted to 25,477,028 pounds, with a value of $6,809,834. European countries were the largest markets, but they were exported to practically all parts of the world.

The imports of manufactures of bladders, except for the years 1917 and 1918, when they reached a value of $1,259 and $8,288, respectively, were negligible. In 1920 they were valued at $138.

Imports of bladders and all integuments, tendons, and intestines of animals (except fish sounds and sausage casings), unmanufactured, averaged, from 1908 to 1918, $138,060, reaching their highest value ($497,000) in 1918. In 1920 this declined to $251,423.

Fish sounds, crude, dried or salted for preservation purposes only, were imported to the value of $104,654 in 1917, but declined to $28,365 in 1920. For the past three years these imports have been chiefly from Canada. In former years large quantities were imported from England and Venezuela.

Sausage casings are imported chiefly from Australia, China, New Zealand, and Argentina. Large quantities are also imported from Europe. In 1919 imports of 11,234,028 pounds were valued at $5,629,412, or approximately five-sixths the value of domestic exports of this article, although less than half the quantity.

Beef weasands were not stated separately in import statistics until 1916. They are now held dutiable as unenumerated unmanufactured articles under paragraph 385. The value of imports in 1920 was $120,019.

TARIFF HISTORY.

Manufactures of amber, bladders, or wax were dutiable at 25 per cent ad valorem under the tariff act of 1890. Under the acts of 1894, 1897, and 1909 they were dutiable at 25 per cent ad valorem, and this was reduced to 10 per cent ad valorem in the act of 1913. Under the act of 1883 amber beads and gum and manufactures of bladders were on the free list.

Unmanufactured bladders, integuments of animals, were first enumerated in the act of 1883, and fish sounds in the act of 1890. They were admitted free under these and all subsequent acts.

Imports by countries.

BLADDERS AND ALL INTEGUMENTS, INTESTINES, AND TENDONS OF ANIMALS, UNMANUFACTURED (EXCEPT FISH SOUNDS AND SAUSAGE CASING).

[Fiscal years.]

Imported from—	1909	1910 [1]	1911	1912	1913	1914
Germany			$3,885		$41,499	$12,494
England			1,282	$334	1,271	3,641
Canada	$3,760		17,604	22,068	46,941	20,931
Chile					6,099	5,572
China			333	2,461	142	1,011
Hongkong			6			2,896
Australia				709		575
Russia in Europe	299		10,906	2,491		
All other	3,295		4,113	13,891	285	6,227
Total	7,354		38,129	41,954	96,237	52,336

[1] Included in "All other articles" in 1910 and after 1914.

Imports by countries—Continued.

FISH SOUNDS (FREE).

Imported from—	1912		1913		1914	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Denmark	2,133	$347	4,621	$792	2,559	$500
England	15,333	4,583	181,569	53,483	102,662	28,763
Canada	125,329	30,700	164,251	57,761	126,606	29,907
Newfoundland and Labrador	8,808	1,325	8,935	1,680	13,740	3,347
Venezuela	120,778	29,456	59,281	15,357	33,212	7,822
British India	7,291	2,244	60,422	17,856	19,712	5,971
All other	1,583	1,507	7,032	3,086	37,299	7,390
Total	281,250	70,162	486,111	149,015	335,790	83,700

Imported from—	1915		1916		1917	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Denmark	4,467	$875	1,100	$288	1,322	$372
England	44,904	15,046	69,549	19,243	26,548	8,058
Canada	155,630	33,649	215,720	49,675	255,108	51,419
Newfoundland and Labrador	10,522	2,108	10,887	1,856	2,721	448
Venezuela	72,085	18,867	95,265	23,299	158,785	37,404
British India	13,986	4,751	.....	.....	50	15
All other	10,287	9,927	3,247	1,502	12,274	28,197
Total	311,881	85,223	395,768	95,863	456,808	104,507

Imported from—	1918		1918 [2]		1919 [2]		1920 [2]	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Denmark	.....	.....	.....	.....	.....	.....	.....	.....
England	5,884	$1,744	.....	.....	.....	.....	.....	.....
Canada	155,657	38,565	108,251	$30,173	82,901	$8,967	.....	.....
Newfoundland and Labrador	5,110	1,137	2,700	296	20	2	.....	.....
Venezuela	158,785	34,200	119,888	26,058	23,371	5,041	.....	.....
British India	.....	.....	.....	.....	.....	.....	.....	.....
All other	5,812	1,853	1,965	363	6,093	2,150	.....	.....
Total	331,248	77,499	232,804	56,890	112,385	16,160	121,765	$27,048

SAUSAGE CASINGS.

Imported from—	1913	1914	1915	1916	1917	1918	1918 [2]	1919 [2]	1920 [2]
Austria-Hungary	$6,634	$35,658	$3,629	.....	.....	.....	.....	.....	.....
Denmark	10,934	14,964	379	$121	.....	.....	.....	.....	.....
Germany	259,563	319,535	69,914	.....	.....	.....	.....	.....	.....
Russia in Europe	4,610	10,112	1,791	121,391	$53,898	$229,266	$215,018	$8,397	.....
Netherlands	150,446	69,545	17,440	.....	880	.....	.....	1,628	.....
England	1,433,633	1,857,875	1,472,518	1,149,259	427,245	88,602	66,444	153,177	.....
Canada	121,395	196,343	283,784	204,693	252,140	448,028	555,119	706,302	.....
Argentina	277,501	200,572	457,889	704,302	745,179	607,608	479,551	980,036	.....
Chile	14,639	.....	31,970	69,122	140,686	129,975	18,568	189,335	.....
China	45,919	22,287	102,095	119,226	407,854	596,662	592,601	1,047,205	.....
British India	1,834	1,089	.....	65	21,164	129,744	117,245	28,829	.....
Japan	.....	28,328	24,273	107,704	103,332	110,896	59,553	79,658	.....
Russia in Asia	521	614	200	493,932	1,058,045	459,172	201,944	44,119	.....
Turkey in Asia	50,959	100,857	40,048	4,486	.....	2,376	2,969	84,465	.....
Australia	6,761	1,344	163,271	233,894	281,238	206,655	293,460	970,635	.....
New Zealand	2,349	5,843	133,374	464,098	557,932	464,658	724,630	1,110,006	.....
British South Africa	.....	.....	5,408	7,899	16,841	38,611	17,051	30,583	.....
All other	88,340	90,691	136,518	285,685	152,801	118,772	164,251	194,537	.....
Total	2,476,082	2,955,657	2,944,501	3,865,877	4,219,235	3,631,025	3,508,434	5,629,412	$7,047,437

[2] Calendar year.

Imports by countries—Continued.

MANUFACTURES OF AMBER.

Imported from—	1909	1910 [1]	1911	1912	1913	1914
Austria-Hungary	$149	.....	$120	$193	$65	$170
France	229	.....	277	28	.....	784
Germany	5,980	.....	2,839	2,113	4,267	8,116
England and Scotland	231	.....	509	176	859	117
All other	137	.....	83	58	28	98
Total	6,726	.....	3,828	2,568	5,219	9,285

MANUFACTURES OF WAX.

Imported from—	1909	1910	1911	1912	1913	1914 [2]
Austria-Hungary	$2,923	$1,552	$1,333	$35	$187	$520
France	13,324	6,226	9,899	5,924	4,505	9,238
Germany	10,940	11,161	3,573	4,283	2,841	7,011
England	3,205	1,903	1,411	3,079	3,451	7,580
Mexico	1,984	333	360	8	1,295	.....
Cuba	.....	95	1,292	.....	948	.....
Argentina	.....	1,463	.....	1,547	2,300	2,210
Brazil	.....	.....	.....	2,765	768	.....
Japan	420	213	132	45	870	4
All other	5,823	593	1,037	2,874	4,111	2,130
Total	38,619	23,539	19,037	20,560	21,276	28,693

[1] Included in "All other articles" in 1910 and after 1914.
[2] Included in "All other articles" after 1914.

Imports for consumption—Revenue.

BLADDERS, INTEGUMENTS, TENDONS, AND INTESTINES OF ANIMALS (EXCEPT FISH SOUNDS AND SAUSAGE CASINGS), UNMANUFACTURED.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:		*Pounds.*				
1908	Free	.....	$6,269	.....	.....	.....
1909	....do	.....	7,871	.....	.....	.....
1910	....do	.....	14,251	.....	.....	.....
1911	....do	.....	41,490	.....	.....	.....
1912	....do	.....	33,365	.....	.....	.....
1913	....do	.....	96,191	.....	.....	.....
1914	....do	.....	50,719	.....	.....	.....
1915	....do	.....	106,060	.....	.....	.....
1916	....do	.....	225,376	.....	.....	.....
1917	....do	.....	439,163	.....	.....	.....
1918	....do	.....	497,906	.....	.....	.....
Calendar year:						
1918	....do	.....	389,311	.....	.....	.....
1919	....do	2,808,388	198,933	.....	$0.070	.....
1920	....do	1,279,818	251,423	.....	.196	.....
1921 [1]	....do	106,684	21,880	.....	.205	.....

FISH SOUNDS, CRUDE, DRIED OR SALTED FOR PRESERVATION ONLY.

Fiscal year:		*Pounds.*				
1908	Free	.....	$113,731	.....	.....	.....
1909	....do	269,518	69,416	.....	$0.258	.....
1910	....do	523,008	83,198	.....	.159	.....
1911	....do	490,213	142,050	.....	.290	.....
1912	....do	258,427	70,679	.....	.273	.....
1913	....do	481,018	147,021	.....	.306	.....
1914	....do	335,190	83,720	.....	.250	.....
1915	....do	308,472	84,543	.....	.274	.....
1916	....do	396,031	96,201	.....	.243	.....
1917	....do	456,738	104,654	.....	.229	.....
1918	....do	331,284	77,499	.....	.233	.....
Calendar year:						
1918	....do	232,804	56,890	.....	.244	.....
1919	....do	112,385	18,160	.....	.161	.....
1920	....do	126,219	28,365	.....	.224	.....
1921 [1]	....do	12,173	4,366	.....	.358	.....

[1] Six months ended June 30, 1921.

Imports for consumption—Revenue—Continued.

SAUSAGE CASINGS.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:		*Pounds.*				
1908	Free	3,530,790	$2,180,703		$0.617	
1909	do	3,535,092	2,529,915		.639	
1910	do	4,497,918	2,601,051		.578	
1911	do	4,138,416	2,652,564		.641	
1912	do	4,818,439	2,395,379		.497	
1913	do	4,579,414	2,482,146		.542	
1914	do		2,958,135			
1915	do		2,945,874			
1916 [1]	do		3,873,027			
1917	do		4,212,216			
1918	do		3,610,019			
Calendar year:						
1918	do		3,624,025			
1919	do	11,234,028	5,629,412		.501	
1920	do	12,137,901	7,049,347		.581	
1921 [2]	do	5,254,110	2,764,479		.526	

WEASANDS OR OX GULLETS.

Fiscal year:		*Pounds.*				*Per cent.*
1916	10 per cent		$29,493	$2,949		10
1917	do		60,834	6,083		10
1918	do		70,546	7,054		10
Calendar year:						
1918	do		43,973	4,397		10
1919	do	188,099	132,263	12,226	.703	10
1920	do	174,326	120,019	12,001	.689	10
1921 [3]	do	88,321	51,764	5,176	.586	10

MANUFACTURES OF AMBER.

Fiscal year:						
1908	25 per cent		$9,915	$2,478		25
1909	do		6,676	1,669		25
1910	do		3,394	848		25
1911	do		3,833	958		25
1912	do		2,568	642		25
1913	do		7,202	1,800		25
1914	do		1,232	308		25
1914	10 per cent		8,100	810		10
1915	do		4,516	451		10
1916	do		5,436	543		10
1917	do		248	24		10
1918	do		721	72		10
Calendar year:						
1918	do		425	42		10
1919	do		2,466	247		10
1920	do		21,846	2,184		10
1920 [2]	Free		25,000			
1921 [3]	10 per cent		5,687	568		10

MANUFACTURES OF BLADDERS.

Fiscal year:						
1908	25 per cent		$42	$10		25
1909	do		21	5		25
1910	do		84	21		25
1911	do					
1912	do		1			
1913	do		26	6		25
1914	10 per cent		3			
1915	do		43	4		10
1916	do		883	88		10
1917	do		1,259	125		10
1918	do		8,288	828		10
Calendar year:						
1918	do		21	2		10
1919	do		88	9		10
1920	do		138	13		10
1921 [3]	do		73	7		10

[1] Beef weasands not included after 1915. (T. D. 35886-37224.)
[2] From Philippine Islands.
[3] Six months ended June 30, 1921.

Imports for consumption—Revenue—Continued.

MANUFACTURES OF WAX, N. E. S.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:						*Per cent.*
1908	25 per cent		$50,345	$12,586		25
1909	do		33,977	8,494		25
1910	do		25,177	6,294		25
1911	do		16,566	4,141		25
1912	do		20,539	5,134		25
1913	do		20,619	5,154		25
1914	do		8,475	2,118		25
1914	10 per cent		27,852	2,785		10
1915	do		16,694	1,669		10
1916	do		25,575	2,557		10
1917	do		16,768	1,676		10
1918	do		62,993	6,299		10
Calendar year:						
1918	do		3,630	363		10
1919	do		12,039	1,204		10
1920	do		14,117	1,411		10
1921 [1]	do		14,436	1,443		10

FROM CUBA (RECIPROCITY TREATY, DEC. 27, 1903).

Fiscal year:						
1908	25 per cent less 20 per cent.		$22	$4		20
1910	do		95	19		20
1913	do		555	111		20
1915	10 per cent less 20 per cent.		715	57		8
1916	do		5,704	456		8
1917	do		3,733	298		8
1918	do		9,613	769		8
Calendar year:						
1918	do		3,630	292		8
1919	do		2,955	236		8
1920	do		2,895	232		8

Domestic exports.

SAUSAGE CASINGS.

[Fiscal years.]

Exported to—	1913		1914		1915	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Belgium	549,349	$75,179	553,019	$69,127	14,873	$1,558
Denmark	408,303	39,277	477,462	55,522	8,972,528	1,557,320
France	857,536	130,116	829,568	132,902	1,376,028	297,144
Italy	32,280	3,698	38,086	5,215	817,206	163,081
Netherlands	7,122,559	1,012,380	9,055,473	1,109,003	4,868,000	558,719
Spain	1,865,577	223,358	2,668,350	302,604	1,807,159	222,198
England	2,244,831	455,359	2,313,502	452,908	2,463,053	479,015
Canada	166,399	62,602	123,347	42,370	142,233	41,966
Australia	815,846	177,262	1,116,706	242,652	723,506	171,475
New Zealand	363,971	86,006	279,013	64,956	265,925	60,112
British South Africa	100,565	29,932	90,687	103,422	24,759	22,792
All other	11,676,175	1,606,259	12,546,993	1,497,201	934,328	1,284,437
Total	26,203,391	3,901,428	30,092,206	4,077,882	30,818,551	4,859,815

[1] Six months ended June 30, 1921.

Domestic exports—Continued.

SAUSAGE CASINGS—Continued.

Exported to—	1916		1917		1918	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Belgium						
Denmark	1,236,063	$233,394	14,960	$2,992		
France	1,158,027	240,301	1,993,491	557,465	503,727	$179,657
Italy	158,356	30,795	54,710	11,286	2,840	1,573
Netherlands	1,747,011	271,118	2,695	1,291		
Spain	1,941,600	234,577	1,605,435	249,818	1,618,799	278,697
England	4,163,695	1,029,766	575,291	192,898	2,020,210	1,456,507
Canada	149,763	51,260	340,067	190,317	708,893	427,525
Australia	842,472	208,435	812,098	311,170	817,499	411,054
New Zealand	203,262	78,677	279,388	119,898	195,955	121,429
British South Africa	110,206	27,208	198,035	54,968	167,777	68,779
All other	2,908,438	462,150	241,890	49,856	131,878	69,316
Total	14,708,893	2,867,681	6,118,060	1,741,959	6,173,578	3,014,537

[Calendar years.]

Exported to—	1918		1919		1920	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Belgium			1,177,174	$213,800		
Denmark			2,195,758	257,983		
France	288,503	$121,226	1,503,512	505,763		
Italy	209	97	642,011	73,322		
Netherlands			5,641,052	659,067		
Spain	704,830	284,929	2,410,091	452,898		
England	1,040,290	945,714	3,300,592	2,776,847		
Canada	847,794	572,294	1,262,494	450,205		
Australia	605,593	373,456	314,820	267,091		
New Zealand	186,783	124,092	141,889	135,481		
British South Africa	182,826	81,366	152,154	77,239		
All other	180,563	108,506	[1] 6,735,481	[1] 940,138		
Total	4,037,391	2,611,680	25,477,028	6,809,834	25,338,187	$5,860,935

MANUFACTURES OF WAX.

[Fiscal years.]

Exported to—	1913	1914	1915	1916	1917	1918
France	$1,287	$5,854	$10,185	$72,644	$44,023	$143,554
Italy	2,049	1,646	5,181	23,239	40,576	28,400
United Kingdom	18,362	29,800	87,960	134,680	63,823	161,654
Canada	38,410	22,584	21,243	60,413	60,907	88,981
Argentina	3,415	1,546	1,902	8,681	47,832	3,213
Brazil	2,375	4,043	1,049	16,557	5,672	14,359
Chile	641	1,142	11,172	54,761	6,163	40,656
Venezuela	296	332	1,994	9,325	7,425	1,262
Dutch East Indies				2,717	15,363	12,103
Hongkong	313	2,509	16	74	5	22,262
Japan	2,810	495	13	13,234	34,247	21,884
Australia	4,835	5,280	4,393	13,074	5,379	64,808
British South Africa	7,652	3,752	8,109	3,675	6,387	9,504
All other	37,373	33,210	31,931	148,454	111,623	104,541
Total	119,818	112,193	185,148	561,528	449,425	717,181

[1] To Germany: 4,484,173 pounds, $506,125.

Domestic exports—Continued.

MANUFACTURES OF WAX—Continued.

[Calendar years.]

Exported to—	1918	1919	1920
France	$36,540	$195,529	.....
Italy	46,012	79,187	.....
United Kingdom	91,820	363,619	.....
Canada	81,077	104,877	.....
Argentina	5,157	36,438	.....
Brazil	14,254	26,010	.....
Chile	14,480	14,985	.....
Venezuela	1,592	9,939	.....
Dutch East Indies	8,786	18,244	.....
Hongkong	550	13,864	.....
Japan	63,033	54,251	.....
Australia	69,626	63,382	.....
British South Africa	16,074	15,121	.....
All other	143,131	386,909	.....
Total	592,132	1,382,355	$1,001,345

Rates of duty.

MANUFACTURES OF AMBER, BLADDERS, AND WAX.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	640	Amber beads and gum	Free.
	655	Bladders, manufactures of	Do.
1890	459	Manufactures of * * * amber, * * *, bladders * * * or wax, or of which these substances or either of them is the component material of chief value, not specially provided for * * *.	25 per cent ad valorem.
1894	351	Manufactures of amber, * * *, bladders * * * wax, or of which these substances or either of them is the component material of chief value, not specially provided for in this act.	Do.
1897	448	.....do.....	Do.
1909	462	Manufactures of amber, * * *, bladders * * * or of which these substances or any of them is the component material of chief value, not specially provided for in this section * * *.	Do.
1913	367	Manufactures of amber, * * *, bladders, or wax, or of which these substances or any of them is the component material of chief value, not specially provided for in this section.	10 per cent ad valorem.

BLADDERS, INTEGUMENTS, TENDONS, AND INTESTINES OF ANIMALS AND FISH SOUNDS.

1883	655	Bladders, crude, and all integuments of animals not specially enumerated or provided for in this act.	Free.
1890	507	Bladders, including fish bladders or fish sounds, crude, and all integuments of animals not specially provided for in this act.	Do.
1894	403	Bladders, and all integuments * * * of animals, and fish sounds or bladders, crude, * * * salted for preservation, and unmanufactured, not specially provided for in this act.	
1897	496	Bladders, and all integuments, * * * and intestines of animals and fish sounds, crude, dried or salted for preservation * * * only, and unmanufactured, not specially provided for in this act.	Do
1909	512	Bladders, and all integuments, tendons and intestines of animals and fish sounds, crude, dried or salted for preservation only, and unmanufactured, not specially provided for in this section.	Do.
1913	419	.....do.....	Do.

COURT AND TREASURY DECISIONS.

Small articles resembling in shape and color, but not in size, various fruits and vegetables, and designed for use only in waxing sewing thread, do not substantially simulate artificial fruits and are dutiable as manufactures of wax. (United States *v.* Duckerhoff, 4 Ct. Cust. Appls. 384, of 1913.)

Wax is not restricted in its meaning by lexicographers, by the courts, or by Congress to substances of animal origin only, but includes all substances of kindred nature derived from mineral or vegetable sources. Paraffin is wax within this paragraph. (United States *v.* Coccaro, 4 Ct. Cust. Appls. 506, of 1913.).

Candles of paraffin wax and cotton wick were held dutiable as manufactures in chief value of wax and not exempt from duty as petroleum products. (G. A. 8018; T. D. 36958, of 1917.) But a combination of waxes stearic acid specially prepared for use in the manufacture of phonographic records is not classable as a manufacture of wax, and is dutiable as an unenumerated manufactured article. (Abstract 28036; T. D. 32379, of 1912.)

Beef weasands are not free of duty under this paragraph as "integuments, tendons, and intestines of animals," but are dutiable as nonenumerated unmanufactured articles under paragraph 385. (United States *v.* White, 8 Ct. Cust. Appls. 115, of 1917.)

Pituitary glands taken from the brain pan of the calf and used in the manufacture of certain medicines are also not within the provisions of this paragraph. (Frankfeld *v.* United States, 7 Ct. Cust. Appls. 296, of 1916.)

Turtle skin or integument lying between the shell of the turtle and the ribs and backbone, used for the purpose of making green-turtle soup, only the integuments being used, was held free of duty under paragraph 51 of the act of 1909. (Abstract 32627; T. D. 33511, of 1913.)

Linings of hogs' stomachs, salted, are free of duty under this paragraph as intestines of animals. (Abstract 43143, of 1919.)

Fish sounds, which according to the testimony are dried and preserved only enough to stand shipping, otherwise not preserved, were held free of duty under this paragraph (Abstract 40051, of 1916), as were fish sounds cleaned and dried after having been split to facilitate the cleaning and drying (United States *v.* Brown, 10 Ct. Cust. Appls. ——; T. D. 38295, of 1920).

Fish sounds, split and dried, the splitting apparently done to perfect the drying process, were likewise classified. (Abstract 41785, of 1918.)

Fish sounds, split, washed, and dried in the sun, such splitting being part of the drying process, were held not to be "prepared fish sounds" within the meaning of that provision in paragraph 34, but free of duty under the provision in this paragraph for "fish sounds, crude, dried, or salted for preservation only, and unmanufactured." (G. A. 8276; T. D. 38088, of 1919.) An appeal is pending from this decision. (T. D. 38125, of 1919.)

GOLDBEATERS' MOLDS AND GOLDBEATERS' SKINS.

General Information.

1913 TARIFF PARAGRAPH.

496. "Goldbeaters' molds and goldbeaters' skins," free.

DESCRIPTION AND USES.

Goldbeaters' skin is the outer membrane of the caecum, or blind gut, of the ox, prepared for the goldbeater. The manufacture is an extremely offensive operation, as the intestines are subjected to partial putrefaction to facilitate the separating of the membranes for the cleaning, drying, and finishing processes. They are finished by treating with camphor or alum and coating with white of egg.

A goldbeater's mold consists of a collection of about 850 leaves of goldbeaters' skins, parchment, and vellum, between which flattened pieces of gold are placed to be hammered out to the finished thickness and size. The intestines of about 380 oxen are required to furnish the leaves of skin for one mold. The skins are each 3½ inches square.

Imports in 1914 were valued at $26,634, practically all from England and Germany; in 1918, $22,609; and in 1920. $41,086.

Goldbeaters' molds and skins have been free of duty in all tariff acts from 1883.

Imports by countries (fiscal years).

GOLDBEATERS' MOLDS AND SKINS.

Imported from—	1909	1910	1911	1912	1913	1914 [1]
Germany	$3,242	$4,968	$4,151	$5,371	$7,632	$7,496
England	20,601	27,719	24,608	27,711	19,484	19,293
Canada	.....	.....	.....	27	.....	285
Austria-Hungary	.....	.....	126	.....	.....	.....
France	.....	.....	36	143	.....	.....
Total	23,843	32,687	28,921	33,252	27,116	27,074

[1] Not separately stated after 1914.

Imports for consumption—Goldbeaters' molds and skins (free).

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:		*Number.*				
1908	Free		$25,818			
1909	do		23,995			
1910	do		32,687			
1911	do		28,921			
1912	do		33,252			
1913	do		26,408			
1914	do		26,634			
1915	do		13,944			
1916	do		23,131			
1917	do		38,651			
1918	do		22,609			
Calendar year:						
1918	do		16,024			
1919	do		11,050			
1920	do	22,802	41,086		$1.80	

Rates of duty—Goldbeaters' molds and goldbeaters' skins.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	710	Goldbeaters' molds and goldbeaters' skins	Free.
1890	598	do	Do.
1894	498	do	Do.
1897	567	do	Do.
1909	579	do	Do.
1913	496	do	Do.

UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPHS 354, 355, 356, and 357 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

FUR HATS, BONNETS, OR HOODS

Paragraph 354:
Fur Hats, Bonnets, or Hoods

Paragraph 355:
Indurated Fiber Ware. (For treatment see par. 349)

Paragraph 356:
Jewelry. (For treatment see par. 333)

Paragraph 357:
Precious and Semiprecious Stones. (For treatment see par. 333)

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this, industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act, reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and Index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and Index," the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Charles F. Yauch, of the Commission's staff, and of others.

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HATS, BONNETS, OR HOODS OF FUR.

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HATS, BONNETS, OR HOODS OF FUR.

SUMMARY.

In 1914 there were 224 establishments, with a total capital of $39,401,429, engaged in the manufacture of fur-felt hats. The total number of wage earners was 21,318, and the value of the product, $37,349,744.

Hatter's fur is by far the most important material entering into the manufacture of fur-felt hats.

The domestic production greatly exceeds the imported article. The skins from which the fur is obtained are, however, imported.

Until 1846 the making of fur-felt hats was a hand trade entirely, since which time machines have gradually replaced handwork, so that to-day there are very few operations that machines can not successfully perform. The European countries have kept pace with the Americans in the use of the most modern and improved machinery. The inventions are due largely to American ingenuity, but it is said that England, Belgium, France, and other European countries have copied American tools, machinery, and methods. Some establishments make the hat from start to finish, some make nothing but hat bodies, while others do finishing only.

The industry is centered in a few eastern States—Pennsylvania, Connecticut, New Jersey, New York, and Massachusetts.

Both value and quantity of fur-felt hats produced in 1914 decreased from that of 1909, the decrease in value being 22 per cent. The census year 1914 covered a period of business depression among fur-felt hat manufacturers. The decline in the business was also attributed to the greater use of caps, cloth hats, and wool-felt hats.

Imports dropped off greatly during the war, but even before the war the quantity imported showed a tendency to decline. Imports decreased from 42,943 dozen in 1910 to 36,725 dozen in 1914. Imports for the year 1912, however, amounted to 55,312 dozen. Imports have not reached prewar figures, the imports for the fiscal year 1920 amounting to 18,115 dozen.

Austria, Belgium, France, Germany, Italy, and England are the principal countries from which hats are imported. Exports of fur-felt hats are not separately shown in official statistics, but with the exception of a well-known make. exports are small.

Prices of hats remained stable during the years 1913–1915, but began to advance in 1916, and at the end of 1918 had advanced about 75 per cent over 1913 prices. This was in marked contrast to hatter's fur, which had advanced approximately 360 per cent.

Style does not afford the protection to domestic producers that it formerly did, due in great measure to the independence of chain stores or hat specialists in originating styles, which formerly were in the hands of a few manufacturers. Caps, wool hats, and hats made of cloth are coming into greater use, as they are cheaper than fur-felt hats.

The labor costs in Europe have been lower than in the United States, due to the lower wages paid abroad and to the introduction of American machinery and methods. In recent years, however, the industry abroad has been so disorganized as to render direct comparisons impossible.

Hats, fur-felt—Summary table.

Year.	Domestic production.	Imports for consumption.	Ratio of imports to production.	Value (imports for consumption).	Amount of duty.	Value per unit of quantity.	Equivalent ad valorem rate.
	Dozen.	*Dozen.*	*Per cent.*				*Per cent.*
1910	[1] 2,989,252	42,940	1.4	$564,606	$304,142	$13.15	53.87
1911	.....	40,999	.....	593,900	313,619	14.48	52.71
1912	.....	55,312	.....	875,221	452,552	15.82	51.75
1913	.....	43,663	.....	747,723	379,487	17.12	50.81
1914	[2] 2,118,634	36,725	1.7	664,717	314,506	18.10	[3] 47.31
1915	.....	18,618	.....	379,937	170,972	20.41	45.00
1916	.....	19,527	.....	313,231	140,954	16.04	45.00
1917	.....	30,063	.....	497,626	223,932	16.55	45.00
1918	.....	22,936	.....	466,049	209,722	20.32	45.00
1919	.....	14,786	.....	405,431	182,444	27.42	45.00
1920	.....	18,115	.....	579,888	260,950	32.01	45.00
1920 [4]	.....	28,039	.....	1,094,373	492,467	39.03	45.00

Domestic exports were not separately stated.

[1] 1909 excludes 366,370 dozen of fur-felt hat bodies and hats in the rough.
[2] Excludes 329,363 dozen of fur-felt hat bodies and hats in the rough.
[3] July 1 to Oct. 3, 1913, 49 per cent; Oct. 4, 1913, to June 30, 1914, 45 per cent.
[4] Calendar year.

General Information.

1913 TARIFF PARAGRAPH.

354. Hats, bonnets, or hoods, for men's, women's, boys', or children's wear, trimmed or untrimmed, including bodies, hoods, plateaux, forms or shapes, for hats or bonnets, composed wholly or in chief value of fur of the rabbit, beaver, or other animals, 45 per cent ad valorem.

DESCRIPTION.

Although head covering in some form is in use throughout the civilized world, the hat as generally recognized is not the form in widest use. The fez, turban, or other headgear is worn by people in thickly populated parts of the world as part of their religious belief. The best felt hat is made of fur. In competition with fur-felt hats are caps, hats made of cloth, and wool-felt hats.

DOMESTIC PRODUCTION.

In 1914 there were 224 establishments engaged in the manufacture of fur-felt hats. The total number of wage earners was 21,318 and the value of the product, $37,349,744. In addition, fur-felt hats to the value of $476,499 were made in establishments engaged primarily in the manufacture of other products. There is some duplication in the value due to the inclusion with "hats, fur-felt," of the product of establishments which made nothing but hat bodies, in some instances under contract work on materials by other manufacturers, and of still others which did finishing only.

Materials.—The chief materials used in the production of fur-felt hats are hatters' fur, leather, bands and binding, satin, and wire. Materials used in shaping and finishing hats are shellac, alcohol, dyes, and chemicals.

By far the most important single material is hatters' fur. This consists of the soft underfur of the rabbit, hare, coney, nutria, or beaver removed from the skin and prepared for use in the manufacture of hats. In the finished hat it does not resemble fur as generally recognized. Through the processes of manufacture the fur loses its identity and becomes a fibrous substance. The fur of the beaver is rarely used now on account of its high price. Rabbit skins are used almost exclusively in the production of hatters' fur. There is no rabbit in this country whose fur is good for hat making except in the production of hats that do not have to be dyed or colored. Some hat manufacturers prepare the fur in their own establishments, but it is mostly purchased from factories engaged in that line of production or from importers. Before the war the finest fur came from Germany. It is generally imported in a cut condition, but sometimes on the skin, in which case it is known as fur skins carroted.

A number of factories in Connecticut produce hat bodies as a final product. These bodies become the material for finishers. In 1914 there were produced in Connecticut 267,178 dozen hat bodies valued at $1,741,885, or $6.52 per dozen. Of the total production in Connecticut only 90,745 dozens, valued at $540,939, were used as material in other factories located in that State, leaving about two-thirds of the rough bodies to be used by hat factories outside the State. The total felt bodies used as materials in 1914 amounted to 395,848 dozens valued at $2,453,503.

Shellac is used in stiffening hat bodies. It is a product of British India. There has not been found a satisfactory substitute. It is subject to sudden fluctuations in price.

Logwood dyes have been superseded by anilines and alizarines resulting in reducing the time consumed in dyeing, greater variations in color, and better control over results.

A comparison of the value of hatters' fur consumed in the United States with imports shows that the domestic production is far in excess of the imports, but the skins from which hatters' fur is produced originate abroad.

The amount of hatters' fur used in the fur-felt hat industry in 1909 was 8,645,576 pounds, valued at $9,278,922, or $1.07 per pound. Imports of furs not on the skin prepared for hatters' use, including fur skins carroted for the fiscal year ending June 30, 1909, amounted to $923,088 and for the year 1910 to $1,499,815. On the basis of these figures imports for 1909 were not quite 10 per cent and imports for 1910 a little over 16 per cent of the total value consumed in 1909. Hatters' fur used in 1914 amounted to 5,766,904 pounds, valued at $7,108,248, or $1.23 per pound. Imports for the fiscal year 1914 amounted to $607,254 and for the year 1915 to $352,705.

Percentages of imports for the fiscal years 1914 and 1915 based on consumption in 1914 were, respectively, 8.5 and 4.9. The value of imports is not strictly comparable with that of consumption, as the former is the actual market value or wholesale price at the time of exportation to the United States in the principal markets of the country whence exported. To the import value, therefore, should

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be added transportation, insurance, and other charges in connection with the shipment; also duties and importers' profit.

Equipment.—Until 1846 the making of hats was a hand trade entirely. The principal processes of manufacture are now performed by machinery, the inventions of Americans. Those of Thomas Blanchard, H. A. Wells, and John T. Waring are, with some modifications, the foundation of present-day machine production. England, Belgium, France, and other European countries have copied American tools, machinery, and methods. The invention of machines used in the manufacture of hats has not been confined to the United States. The machine method of pressing derby hats was in use in England before being introduced here.

Methods of production.—The manufacture of fur-felt hats is divided into what is known as front-shop and back-shop work. Back-shop work begins with the raw fur and continues through the processes of making the bodies and shaping them ready to be finished. Front-shop work consists of the finishing processes. Most of the largest establishments make the hat from start to finish. The larger number of shops, however, is engaged in performing only part of the processes of manufacture, some make nothing but hat bodies, often under contract work on materials furnished by other manufacturers, and others do finishing only. The making of hat bodies is carried on in factories, while finishing is often done on a small scale by retail stores. For a comparison of establishments engaged in the manufacture of hat bodies and those engaged in the finishing of hats, see page 21.

Mixing.—The first operation in the manufacture of fur-felt hats is the mixing of the fur. The different furs are placed in layers in a bin and thoroughly mixed. From the bin the fur is transferred to a mixer consisting of a box partly wire screened and containing toothed cylinders revolving at high speed.

Blowing.—Blowing carries forward the process of mixing and, in addition, cleans the fur by separating and removing dirt and other extraneous matter. The fur is kept constantly agitated in a current of air. The blower is divided into a number of sections, each section being complete in itself. It is important that the fur be thoroughly cleaned, as otherwise defects will be brought to light in subsequent operations. Formerly the fur was passed through a six-section machine, but now the sections number from 12 to 40.

Forming.—Clean fur from the blower is weighed out into boxes, each containing a sufficient quantity to make one hat. The fur is fed into a machine called a former, which consists of a perforated copper cone revolving on a shaft and inclosed in a chamber. An exhaust fan draws the fur about the cone and holds it there by suction. When the fur is properly distributed the cone wrapped with a piece of wet burlap is removed and dipped into warm water until thoroughly soaked. The fur is then removed from the cone in one mass. This is made possible by the felting of the fur, which begins when the cone is lowered into the vat of water. In felt fabrics the fibers are interwoven and interlocked in every possible way. It has a smooth surface, no designs or figures, and does not need to be cut "to match." It is not only possible but necessary to start the work in the general form of the completed article, as the shape can not be greatly altered after once the fibers are matted without destroying the fabric.

Hardening.—Hardening consists of several operations, the object of which is to promote felting, to add strength and durability to the fabric, and to reduce the mass to proper proportions. The fur cone is rolled and pressed first by hand and afterwards by machinery. The hardener sprinkles the fur cone with hot water from a brush and wraps it in a cloth and rolls it a few times. The body is opened up to prevent sticking together and examined for imperfections. In the sizing room the starter does nearly the same work as the hardener, but with less care, and the sizer does about the same work as the starter but in a more vigorous manner. Sizing is a hand operation in some factories and a machine operation in others. In machine sizing the work is divided into three stages, the fabric being manipulated by rolls which in each succeeding stage are operated at higher rates of speed. After being sized to proper height and thickness the hat bodies are pinned out.

Pinning out.—This is a machine operation. The machine consists of a revolving cone upon which the hat body is placed and a second cone pressed against the outer surface of the body. The water is thus squeezed out. The smaller cone also acts as an iron. By this operation the felt is made smoother, of a more uniform thickness and the body more exact in size. Whizzers or centrifugal extractors are used to dry the bodies.

Shaving.—Long, loose hairs are cut off by passing the hat body over a cone-shaped roller that brings the fabric in contact with rapidly revolving knives. The finer soft hats are returned to the sizers for further manipulation.

Dyeing.—Some colors are obtained more satisfactorily if applied after the bodies have been stiffened. As a rule, however, dyeing precedes the stiffening process. If strong colors are desired the bodies are placed in vats of large capacities and stirred mechanically by moving paddles. If delicate shades are desired only a few bodies can be placed in the vat at one time, for their submersion in the bath dye beyond the exact time would intensify the color; hence large quantities can not be handled at one time.

Stiffening.—Stiffening consists in applying a solution of shellac to the bodies. It is done either by hand or machine. In the hand process the body is dipped into the solution and an operator using a brush or a "jack," scrubs or rolls the gum into the felt. In the machine process the body is passed between rollers which together with a brush work the gum into the fabric. The machine can be so arranged that more stiffening can be applied to different parts as desired. The bodies are then placed in ovens, with apertures in the top, through which the vaporized alcohol passes. To remove the shellac from inner and outer surfaces, the bodies are dipped in an alkaline solution, after which they are scrubbed with brushes and washed in fresh water. This is also a machine operation. Stiffening of soft hats is confined to the brims and is a machine operation.

Stretching and blocking.—After stiffening, the bodies are passed through several operations to give them the first rough outlines of the finished article. Before being stretched they are dipped in hot water to soften the shellac. Tip stretching consists in forcing the felt between the rays of two metal stars. The same principle is involved in brim stretching but the stars are so arranged that only

that part of the fur cone which is to become the brim is stretch
These two operations are performed by machines. Wet blocking
done by hand in some establishments and by machines in others.
is claimed that hand blocking is superior to machine as the la
puts too much strain on the body. Whizzers are used to dry
bodies after they have been wet blocked. Back shop operations
here.

FINISHING PROCESSES.

The finishing processes are conducted in the "front shop." The
consist in shaping the body, removing protruding fur fibers, smoothing
the felt with irons and pads, and trimming with bands, binding
leathers, and linings. Soft hat finishing differs from that for st
hats.

Pouncing.—Soft hats are crown pounced, which consists of fitting
the hat over a block, attached to a revolving shaft and rubbing the
surface of the felt with a pad of pouncing paper to give it smoothness.
Crown pouncing is done by hand and by machine, though the hand
process is considered the better method. Brims are pounced by
machines.

Before pouncing stiff hats, they are machine pressed which gives
the crown the size and dimensions required. As in soft hats, the
crowns are generally pounced by hand, especially in the better grades
and the rims by machine. Owing to the greater amount of shellac
in a stiff hat the pouncer has to use greater care to avoid wearing
down the fur so as not to expose the shellac. The pouncing machine
was invented in 1853 by John T. Waring, an American.

Blocking.—Hats are dampened and then the blocker stretches the
crown over a wooden block of the exact shape of the finished hat
until it fits the block. The blocker irons the brim. The crown of
the hat is ironed by a machine, an ingenious machine invented by
Charles Reid, an American. The soft hat is again pounced, this time
with more care.

Rim trimming and shaping.—The rough edges of the rim are
trimmed by a cutting machine and the rim brought to the desired
width. The curl given to the rim is also done by means of a machine.
Brims of stiff hats are rounded as in soft hats. Instead of being
curled, they are "edged up;" that is, turned up along the extreme
edge. The brim is set by a process known as matricing, the iron
mold used being known as a matrix. Edges are hand planed before
binding. Wires are placed in that part of the brim "edged up" to
produce a spring. In finer grade hats wires are not used.

Trimming.—The bands, bindings, and leathers have much to do
with the general appearance of the hat and it is necessary that suitable
trimmings be used to conform to shape and color of the body. Sew-
ing machines are used largely in attaching the trimmings.

Organization.—The total capital of the 224 establishments engaged
in the manufacture of fur-felt hats amounted to $39,401,429 in 1914.
For the industry as a whole it takes a little over a year to make one
complete turnover of capital. The corporate form of ownership pre-
vails, there being 103 of the corporate, 94 of the individual, and 27 of
"other" forms of ownership. About 81 per cent of the total value of
products was produced in establishments owned by corporations.

In 1914 six establishments reported products valued at over $1,000,000. Their combined products amounted to $13,618,957, or 36.5 per cent of the total value. The following tables show size of establishments according to value of products and average number of wage earners:

Establishments grouped according to value of products.[1]

Value per establishment.	Number of establishments.		Average number of wage earners.		Value of products.	
	1914	1909	1914	1909	1914	1909
Total	224	273	21,318	25,064	$37,349,744	$47,864,630
Less than $5,000	39	35	52	53	89,827	104,234
$5,000 to $20,000	59	63	281	334	606,939	695,573
$20,000 to $100,000	52	78	1,379	1,987	2,534,833	3,639,413
$100,000 to $1,000,000	68	91	11,538	13,141	20,499,188	26,673,802
$1,000,000 and over	6	6	8,068	9,549	13,618,957	16,751,608

[1] Data from Abstract of the Census of Manufactures, 1914.

Establishments grouped according to average number of wage earners.[1]

Wage earners per establishment.	Number of establishments.		Number of wage earners.		Per cent of total wage earners.			
							Cumulative.	
	1914	1909	1914	1909	1914	1909	1914	1909
Total	224	273	21,318	25,064	100	100	.....	.....
No wage earners	6	12	.....	.....	.....	.....	.....	.....
1 to 5	74	71	194	200	0.9	0.8	0.9	0.8
6 to 20	46	56	510	687	2.4	2.7	3.3	3.5
21 to 50	22	47	671	1,597	3.1	6.4	6.4	9.9
51 to 100	25	32	1,725	2,224	8.1	8.9	14.5	18.8
101 to 250	30	31	4,817	4,600	22.6	18.3	37.1	37.1
251 to 500	17	19	6,002	6,579	28.2	26.3	65.3	63.4
501 to 1,000	2	2	1,101	1,102	5.2	4.4	70.5	67.8
Over 1,000	2	3	6,298	8,075	29.5	32.2	100.0	100.0

[1] Data from Abstract of the Census of Manufactures.

In 1914 there were 15,539, or 72.8 per cent, males employed, of whom 158 were under 16 years of age, and 5,779 females, of whom 19 were under 16. The lowest average number employed was in May, 19,791, and the maximum in October, 22,438. The per cent of wage earners employed in establishments where the prevailing hours of labor were less than 54 per week, was 40.6 in 1909 and 74.5 in 1914.

Geographical distribution.—It was claimed by manufacturers at the tariff hearings in 1913 that the fur-felt hat industry was not a sectional nor a New England one. According to the census returns, 1914, the industry is confined to a few Eastern States—Pennsylvania, Connecticut, New Jersey, New York, and Massachusetts. These States contained 175 establishments, or 78.1 per cent of the total number, and produced a product valued at $35,988,044, or 96.4 per cent of the total. The industry is also confined to a few cities in those States, namely, Philadelphia, Danbury, Newark, New York, and Orange. The value of fur-felt hats produced in these cities amounted to $28,619,498, or 59.8 per cent in 1909, and to $27,305.966, or 73.1 per cent in 1914.

History of the industry.—The manufacture of fur-felt hats in the United States dates back to early colonial days. Encouragement was given to manufacturers by legislative enactments. The Assembly of Virginia offered 10 pounds of tobacco for every good wool or fur hat made in the colony. A prize of 40 shillings was offered by Delaware for the neatest and best hat manufactured in the lower counties. Exportation of raccoon skins were prohibited by Virginia. By 1731 the industry had become of so much importance that English manufacturers petitioned Parliament to forbid the importation of hats produced in the American colonies. The committee reported that 10,000 beaver hats were made annually in New York and New England, and that there were 10 hatters in Boston, one making 40 hats a week. Carolina also had a flourishing industry and exported hats to the Spanish islands. Zadoc Benedict began the manufacture of hats in 1780 at Danbury, Conn. He employed two apprentices. New London County in Connecticut was also a center of the industry. The industry had become of importance in Pennsylvania as early as 1786. It is estimated that there were produced 54,000 fur hats and 160,000 wool hats annually and that there were 68 hatters in Philadelphia and vicinity and 247 hatters in other parts of the State.

The total number of fur hats reported as manufactured in 1810 amounted to 457,666, of which 45,369 were made in Pennsylvania; 142,645, valued at $415,167, in Massachusetts; 31,524, valued at $94,052, in New Jersey; and fur hats valued at $304,472 in Maryland.

Manufacturers assembled in convention in 1831 estimated the production of all kinds of hats and caps at $15,000,000 annually and that employment was given to 15,000 men and boys and 3,000 women. The census of 1840 reported the value of all kinds of hats and caps at $8,704,342. In 1850 the capital of establishments engaged in the manufacture of hats and caps amounted to $4,427,798 and in 1860 to $4,136,572. In the latter year 2,449,672 fur hats, 2,462,974 felt or soft hats and 6,191,482 wool hats were produced. It was not until 1900 that the manufacture of fur-felt hats was treated as a separate industry by the census.

Up to 1846 the manufacturing processes were almost entirely performed by hand. The first notable invention appears to be that of Henry Blynn, of Newark, N. J., who in 1835 invented a machine for stiffening hats. Other noteworthy inventions are those of Thomas Blanchard, John T. Waring, and H. A. Wells, who may be considered the pioneers in labor-saving inventions. The ironing machine use in ironing the crown of the hat was invented by Charles Reid. The modern machines are based on the principles of these original inventions.

Domestic production and consumption.—It was not until the census of 1900 that separate statistics of production were shown for the fur-felt hat industry. The value of products in 1904 increased 31.7 per cent compared with that of 1899, and 30.7 per cent in 1909 compared with that of 1904. A comparison of the value of products in 1914 with that of 1909 shows a decrease of 22 per cent. The decreases for the various States were: Massachusetts, 76.9 per cent; New York, 35 per cent; Pennsylvania, 15.2 per cent; New Jersey,

9.7 per cent; and Connecticut, 8.9 per cent. On page 157 of the Census of Manufactures 1914, Vol. II, it is stated:

The census year of 1914 covered a period of business depression among felt-hat manufactures. This industry is one of the first to feel the pinch of a financial stringency, due to the fact that when a man finds he must economize, the cost of headgear is often one of the first items to be reduced. Thus the general business depression of 1914 was reflected in the manufacture of fur-felt hats.

Aside from the general depression which the manufacturers of fur-felt hats shared in common with many manufacturers in other industries in 1914, there were two additional causes of lessened production which related only to this industry. One cause of this change was the substitution of the cheaper cloth caps, popularized in connection with the automobile, for men's fur-felt hats, and of velvet, satin, and other cloth hats for women's fur-felt hats. The value of the production of "hats and caps, other than straw, felt and wool," increased from $13,689,338 in 1909 to $18,593,221 in 1914, or by 35.8 per cent; and this rather large increase took place at a time when many of the industries showed decreases or only insignificant increases in 1914 as compared with 1909. Furthermore, the styles of fur-felt hats prevailing in 1914 also resulted in lessened production. The demand at that time for soft instead of stiff hats, with a resulting reduction in the number required; for, when the style runs largely to stiff hats, the consumer buys a new one more frequently than when soft hats are in fashion.

Manufacturers stated at tariff hearings in 1913 that business was not up to full capacity due partly to change in styles and partly to the demand for cloth caps and wool hats. It was claimed that their factories were running 75 per cent of full time and in some cases as low as 50 per cent.

In the table which follows, production and consumption of fur-felt hats in the United States are shown for the years 1899, 1904. 1909, and 1914.

Production and consumption of fur-felt hats and bodies in the United States.

Item.	1899	1904	1909	1914
Production:	*Dozen.*	*Dozen.*	*Dozen.*	*Dozen.*
Fur hats	1,882,372	2,611,875	2,989,252	2,118,634
Fur hat bodies	165,010	88,986	366,370	329,363
Total hats and bodies	2,047,382	2,700,861	3,355,622	2,447,997
Imports for consumption	5,735	8,817	32,715	36,725
Total production and imports	2,053,117	2,709,678	3,388,337	2,484,722
Domestic exports	(1)	(1)	(1)	(1)
Consumption	2,053,117	2,709,678	3,388,337	2,484,722
Production:				
Fur hats	$25,385,506	$34,314,234	$43,442,466	$33,603,531
Fur hat bodies	992,730	660,959	2,703,738	2,372,937
Other than in hat factories		333,441	806,601	476,499
Total hats and bodies	[2] 26,378,236	[2] 35,308,634	[2] 46,952,805	[2] 36,452,967
Imports for consumption	80,250	119,883	397,917	664,717
Total production and imports	26,458,486	35,428,517	47,350,722	37,117,684
Domestic exports	(1)	(1)	(1)	(1)
Consumption	26,458,486	35,428,517	47,350,722	37,117,684

[1] Not separately stated. Manufacturers have stated at tariff hearings that outside of one firm there are practically no exports.

[2] Excludes in 1899, $1,432,951; in 1904, $1,654,160; in 1909, $1,718,426: and in 1914, $1,373,276 value of all other products and work on materials for others.

Exports.—Domestic exports of fur-felt hats are not separately stated in official statistics. With the exception of one firm, which has a well-known trade-mark or name, exports are small. Felt hats and hat materials are separately stated in 1918 and 1919. Exports for these years amounted to $1,273,799 and $1,699,532, respectively.

FOREIGN PRODUCTION.

The chief foreign countries producing fur-felt hats which come in competition with the domestic product are, or were before the war, Austria-Hungary, England, France, Italy, Belgium, and Germany. The industry is centered at Denton and Stockport in England, and at Brussels in Belgium. Domestic manufacturers state that the foreign-made hat in most active competition with the American-made hat is that which comes from Italy.

IMPORTS.

Imports for consumption decreased from 42,943 dozen in 1910 to 36,725 dozens in 1914, although the value increased from $564,606 to $664,717, or from $13.14 to $18.10 per dozen. The year 1912, however, shows imports of 55,312 dozen, valued at $875,257, the highest in quantity and value for the five-year period preceding the war. In the five-year period 1915–1919 (fiscal years) the greatest amount imported was in 1917 when imports amounted to 30,063 dozen, valued at $497,626, and the lowest in 1919 when they amounted to 14,786 dozen, valued at $405,431. In the year 1920 imports amounted to 18,115 dozen, valued at $579,888. The value per dozen has advanced from $13.14 in 1910 to $32.01 in 1920.

Imports by countries were first separately stated in 1912. In this year 56,280 dozens, valued at $885,943, were imported. Based on quantity 18.5 per cent came from Austria-Hungary, 16.7 per cent from Belgium, 25.1 per cent from France, 7 per cent from Germany, 6.4 per cent from Italy, 26.2 per cent from England, and 0.1 per cent from all other countries. Imports from Austria-Hungary averaged $19.88 per dozen, the highest; from Belgium, $10.76 per dozen, the lowest. The averages per dozen for other countries were France, $18.73; Germany, $16.86; and Italy, $13.36.

Imports from only two countries increased in quantity in 1914 over 1912. Of the 35,751 dozens imported 38.2 per cent came from Austria-Hungary and 12.8 per cent from Italy. England furnished 17.3 per cent; France, 15.1 per cent; Belgium, 12.6 per cent; and Germany, 3.8 per cent. Imports from all countries except Belgium increased in value per dozen. Austria-Hungary with $22.28 per dozen was highest and Belgium with $9.63 per dozen was lowest. Imports from England increased in value from $13.37 to $18.29 per dozen; Italy from $13.36 to $14.16; Germany, $16.86 to $19.59; and France from $18.73 to $19.25.

Imports dropped off greatly during the war. In the years 1917–1919, inclusive, no imports were received from Austria-Hungary, Belgium, and Germany. Imports from Italy during this period as well as for the years 1918 and 1919 exceeded prewar figures, while those of France and England declined. About 75 per cent of the quantity imported in the years 1918 and 1919 came from Italy. The value per dozen of hats imported in 1919 from France averaged $37.09; England, $37.01; and Italy, $24.58.

PRICES.

The prices shown on page 25 of this report are taken from Bulletin No. 27, Prices of Hatter's Fur and Fur-Felt Hats, issued by the War Industries Board. With reference to the source of the quotations the board states:

The prices of hatter's fur were obtained from the American Hatter. For hat prices quotations were obtained from manufacturers, and those grades were selected which the different firms consulted considered standard.

The War Industries Board, with reference to the rise in prices, states:[1]

* * * the prices of hatter's fur, which had been reasonably stable for the years 1913, 1914, and 1915, rose at the end of 1918 approximately 360 per cent above the 1916 price, while the prices of the finished hats increased only 75 per cent. The shipping embargo, of course, had a material effect on the price of fur, but the contrast between raw and finished product is so striking that, coupled with the fact of the large stocks known to be on hand, it gives ground for the suspicion held by members of the War Trade Board familiar with the industry that the raw materials had been subject of considerable speculation or profiteering. On the contrary, the hat manufacturers did not make the prevailing high prices of hatter's fur an excuse for marking up the material they had in stock and making a corresponding increase in the price of their hats.

TARIFF HISTORY.

With the exception of the acts of 1897 and 1909, the duty imposed on the importation of fur-felt hats has been ad valorem. The rate under the act of 1883 was 30 per cent; act of 1890, 55 per cent; 1894, 40 per cent; and 1913, 45 per cent.

The acts of 1897 and 1909 imposed an ad valorem duty of 20 per cent and in addition a specific duty varying from $2 to $7 per dozen in 1897 and from $1.50 to $7 per dozen in 1909. The classification according to value in the 1909 act was brought in nearer agreement with the commercial divisions in hat prices, which, starting with $4.50, increase in arithmetical progression by $1.50 per dozen. The following table shows imports for consumption, duties, average per unit, and equivalent ad valorem rate in representative years under various tariff acts:

Items.	1896 (tariff act of 1894).	1905 (tariff act of 1897).	1912 (tariff act of 1909).	1914 (tariff act of 1913).
Imports:				
Quantity.....dozen..	.....	8,143	55,312	[a] 36,725
Value.....	$117,663	$119,324	$875,257	[b] $664,717
Average per unit.....	.....	$14.65	$15.82	[c] $18.10
Duties.....	$47,065	$62,354	$452,561	[d] $314,506
Equivalent ad valorem.....per cent..	40.00	52.26	51.71	[e] 47.31

[a] 19,094 dozen from July 1 to Oct. 3, 1913, and 17,631 dozen from Oct. 4, 1913, to June 30, 1914.
[b] $384,961 from July 1 to Oct. 3, 1913, and $279,756 from Oct. 4, 1913, to June 30, 1914.
[c] $20.16 from July 1 to Oct. 3, 1913, and $15.87 from Oct. 4, 1913, to June 30, 1914.
[d] $188,616 from July 1 to Oct. 3, 1913, and $125,890 from Oct. 4, 1913, to June 30, 1914.
[e] 49 per cent from July 1 to Oct. 3, 1913, and 45 per cent from Oct. 4, 1913, to June 30, 1914.
[1] Price Bulletin No. 27, War Industries Board.

[illegible] CONDITIONS.

[illegible] protection to the domestic [illegible] were originated by four or [illegible] and merchants in placing their [illegible] manufacturers would stipulate that the hats be [illegible] with the styles brought out by these leaders. [illegible] would not be known until the opening [illegible] which these models would be displayed for the first time. [illegible] would immediately copy these models and begin the manufacture of hats in fulfillment of their orders. The [illegible] was not in a position to compete successfully with the domestic producers on account of the greater length of time it would take them to make deliveries.

Other changes in hat styles have brought about a change in this respect. They do not depend upon the leading hat manufacturers for their styles but originate their own. Their orders are placed either with the domestic or foreign producer with whom most satisfactory arrangements can be made.

Caps, wool hats, and hats made of cloth are coming into greater use and consequently have affected the output of fur-felt hats.

Labor. Wages before the war were lower in Europe than in the United States, which together with the introduction of American machinery and methods resulted in a lower labor cost abroad. In a brief filed by American manufacturers in 1913 it is stated that the labor cost on an English hat selling at $14.40 per dozen was $2.74 and on an American hat selling at $14.85 per dozen $7.23. The wages of labor in England were said to be 10 per day, and the same in France, where there are no unions and where boys and girls are employed. According to census reports on the industry in the United States [illegible] per cent in 1909 and 74.5 per cent in 1914 of the total [illegible] were employed in establishments where the prevailing [illegible] was less than $4 per week. The disorganization of [illegible] has rendered it impossible to secure trustworthy [illegible]

[illegible] hat manufac- [illegible] is nearer the [illegible] and [illegible]

Hats, fur-felt [1]*—Summary.*

[The manufacture of stiff and soft hats of fur felt is presented under this heading. The fur of the rabbit, the hare, and the coypu is the chief material. In some instances it is removed from the skin in the larger hat shops, but to what extent can not be determined from the returns. Much of the fur is bought from establishments doing nothing but cutting hatters' fur; they are classed under "hat and cap materials." A considerable quantity of cut fur is imported. While many concerns classed under "hats, fur-felt," make the hat from start to finish, others make nothing but the hat bodies, some of them doing work under contract on materials furnished by other manufacturers, and still others do finishing only. There is thus some duplication in the value of products. Separate statistics were first shown at the census of 1899. In 1879 and in 1889 fur-felt hats were included with "hats and caps, not including wool hats" and in 1869 with "hats and caps."]

	Number of establishments.	Wage earners (average).	Primary horsepower.	Capital.	Wages.	Cost of materials.	Value of products.	Value added by manufacture.
United States:								
1914	224	21,318	20,851	$39,401,000	$12,071,000	$16,947,000	$37,350,000	$20,403,000
1909	273	25,064	19,245	35,734,000	14,223,000	22,109,000	47,865,000	25,756,000
1904	216	22,047	16,630	23,258,000	11,282,000	15,975,000	36,629,000	20,654,000
1899	171	18,880	11,483	16,701,000	9,119,000	13,514,000	27,811,000	14,297,000
States, 1914:								
California	6	58	16	54,000	39,000	92,000	157,000	65,000
Connecticut	58	5,461	6,029	6,167,000	3,057,000	4,633,000	9,476,000	4,843,000
Illinois	9	43	22	56,000	28,000	53,000	118,000	65,000
Massachusetts	10	629	976	1,422,000	279,000	470,000	865,000	395,000
Missouri	6	114	24	88,000	73,000	202,000	321,000	119,000
New Jersey	41	4,401	4,722	5,266,000	2,603,000	3,708,000	7,969,000	4,261,000
New York	39	3,563	2,388	6,295,000	1,854,000	3,491,000	6,637,000	3,146,000
Ohio	7	27	13	29,000	19,000	47,000	91,000	44,000
Pennsylvania	27	6,714	6,241	19,526,000	3,934,000	3,889,000	11,041,000	7,152,000
Texas	3	13	10	22,000	12,000	8,000	30,000	22,000
All other States	18	295	410	476,000	173,000	354,000	645,000	291,000

[1] Data from Abstract of the Census of Manufactures, 1914.

Hats, fur-felt [1]*—Cost of materials and value of product in United States.*

	1914	1909	1904	1899
MATERIALS.				
Total cost	$16,947,056	$22,109,231	$15,975,206	$13,513,668
Hatters' fur:				
Pounds	5,766,904	8,645,576	6,718,359	6,166,269
Cost	$7,106,248	$9,278,922	$6,743,936	$6,376,991
Fur-felt hat bodies and hats in the rough:				
Dozens	395,848	406,447	211,760	148,212
Costs	$2,453,503	$2,875,248	$1,351,372	$882,986
Chemicals and dyestuffs, cost	$432,161	$843,587	$1,140,281	$556,794
All other materials, cost	$6,953,146	$9,411,474	$6,739,617	$5,596,897
PRODUCTS.				
Total value	[2] $37,349,744	[2] $47,864,630	[2] $36,629,353	$27,811,157
Fur-felt hats:				
Dozens	2,118,634	2,999,252	2,611,875	1,862,372
Value	$33,603,531	$43,442,496	$34,314,234	$25,385,506
Fur-felt hat bodies and hats in the rough:				
Dozens	329,363	366,370	88,996	165,010
Value	$2,372,937	$2,705,738	$960,959	$992,730
All other products, value	[3] $864,309	$1,164,872	$1,093,361	$941,032
Work on materials for others	[3] $506,967	$553,554	$560,799	$491,919

[1] Data from Abstract of the Census of Manufactures, 1914.

[2] In addition in 1914 fur-felt hats, to the value of $476,499; in 1909, to the value of $906,601; and in 1904, to the value of $333,441, were made by establishments engaged primarily in the manufacture of products other than those covered by the industry designation.

[3] Corrected figures.

Hats, fur-felt [1]—Materials and output, by States.

State.	Cost or value, 1914.	Quantity.			
		1914.	1909.	1904.	1899.
MATERIALS.					
Hatters' fur	$7,108,248	*Pounds.* 5,766,904	*Pounds.* 8,645,576	*Pounds.* 6,718,359	*Pounds.* 6,166,269
Connecticut	1,967,618	1,731,569	1,673,332	1,385,325	1,499,767
Massachusetts	(2)	(2)	1,047,438	547,484	456,593
New Jersey	1,690,520	1,327,918	1,817,020	1,880,510	1,897,113
New York	706,701	842,514	1,883,207	1,563,680	1,281,452
Pennsylvania	2,519,557	1,459,412	1,976,118	1,227,951	817,311
All other States	223,852	405,491	248,461	113,409	214,033
		Dozen.	*Dozen.*	*Dozen.*	*Dozen.*
Fur-felt bodies and hats in the rough	2,453,503	395,848	406,447	211,760	148,212
Connecticut	540,939	90,745	87,117	30,783	61,726
Massachusetts	50,897	6,775	29,979	3,289	29,338
New Jersey	186,901	58,256	29,156	40,992	22,711
New York	1,200,908	180,848	194,268	92,984	24,620
Pennsylvania	75,071	11,987	26,984	23,512	5,045
All other States	398,787	47,237	38,943	20,200	4,772
PRODUCTS.					
Fur-felt hats	33,603,531	2,118,634	2,989,252	2,611,875	1,882,372
Connecticut	7,585,947	515,986	530,558	600,312	497,683
Massachusetts	708,793	62,711	320,587	234,792	227,032
New Jersey	7,149,716	496,423	579,596	676,906	590,939
New York	5,943,763	477,338	776,258	631,374	226,061
Pennsylvania	11,013,629	472,498	668,696	413,506	280,880
All other States	1,201,683	93,678	113,557	54,985	59,777
Fur-felt hat bodies and hats in the rough	2,372,937	329,363	366,370	88,986	165,010
Connecticut	1,741,885	267,178	335,947	63,676	153,188
All other States	631,052	62,185	30,423	25,310	11,822

[1] Data from United States census reports.
[2] Included in "All other States."

Hats, fur-felt [1]—Production in United States, by States.

[From Federal census.]

States.	1899	1904	1909	1914
Connecticut	$7,546,882	$8,662,799	$10,399,860	$9,475,778
Massachusetts	2,630,964	2,315,591	3,745,873	864,722
New Jersey	7,211,229	9,540,433	8,825,217	7,969,344
New York	5,602,458	7,739,774	10,218,660	6,637,380
Pennsylvania	4,243,352	7,350,311	13,022,617	11,040,820
All other	576,302	1,020,445	1,652,403	1,361,700
Total	27,811,187	36,629,353	47,864,630	37,349,744

[1] In addition, in 1914, fur-felt hats to the value of $476,499; in 1909, to the value of $806,601; and in 1904 to the value of $333,441 were made in establishments engaged primarily in the manufacture of products other than fur-felt hats.

Hats, fur-felt [1]*—Production in United States, by cities.*

[From Federal census.]

Cities.	1899	1904	1909	1914
Philadelphia, Pa	$3,075,470	$5,847,771	$10,401,794	$9,914,443
Danbury, Conn	5,007,095	5,798,107	7,114,683	7,065,765
New York, N. Y	2,241,347	3,899,435	4,765,029	3,601,944
Newark, N. J	3,453,619	4,586,040	4,433,132	3,900,954
Orange, N. J	2,246,494	2,311,614	1,904,860	2,822,860
All other	11,787,172	14,186,386	19,245,132	10,043,778
Total	27,811,197	36,629,353	47,864,630	37,349,744

[1] In addition, in 1914, fur-felt hats to the value of $476,449; in 1909, to the value of $806,601; and in 1904, to the value of $333,441 were made by establishments engaged in the manufacture of products other than fur-felt hats.

Fur-felt hats—Comparison of establishments engaged in making hat bodies and finishing hats, 1914.[1]

Items.	Total.	Establishments engaged primarily in—		Per cent distribution.	
		Making hat bodies.	Finishing hats.	Making hat bodies.	Finishing bodies.
Number of establishments	224	86	138	38.4	61.6
Persons engaged	22,932	20,012	2,920	87.3	12.7
Proprietors	163	41	122	25.2	74.8
Salaried employees	1,451	1,132	319	78.0	22.0
Wage earners	21,318	18,839	2,479	88.4	11.6
Primary horsepower	20,851	19,837	1,014	95.1	4.9
Capital	$39,401,429	$34,217,567	$5,183,862	86.8	13.2
Salaries and wages	14,000,263	12,222,924	1,777,339	87.3	12.7
Salaries	1,929,451	1,610,739	318,712	83.5	16.5
Wages	12,070,812	10,612,185	1,458,627	87.9	12.1
Contract works, paid	19,825	16,141	3,684	81.4	18.6
Rent and taxes	324,626	202,079	122,547	62.2	37.8
Cost of materials	16,947,058	13,256,141	3,690,917	78.2	21.8
Value of products	37,349,744	30,806,848	6,542,896	82.5	17.5
Value added by manufacture	20,402,686	17,550,707	2,851,979	86.0	14.0

[1] Data from Census of Manufactures: 1914.

The statistics for the manufacture of hats are included under six classifications: "Hat and cap materials;" "hats and caps, other than felt, straw, and wool;" "hats, straw;" "hats, wool-felt;" "hats, fur-felt;" and as "trimmed hats, and hat frames," under "millinery and lace goods." The following statement summarizes the statistics for these six classifications and gives a total for all varieties of head coverings as far as it can be shown from census reports. The inclusion of hat and cap materials and of hat bodies and hats in the rough results in duplication, as these materials are included in the value of products of the establishments that produce the complete article.

Hats and caps,[1] 1914—Miscellaneous.

	Total.	Hats.			Hats and caps other than felt, straw, and wool.	Trimmed hats and hat frames.	Hat and cap materials.
		Fur-felt.	Wool-felt.	Straw.			
Number of establishments	1,715	224	30	149	580	634	98
Persons engaged	65,891	22,932	1,372	10,619	8,942	19,954	2,072
Proprietors and firm members	1,939	163	38	137	797	703	101
Salaried employees	6,203	1,451	85	999	823	2,649	196
Wage earners (average number)	57,749	21,318	1,249	9,483	7,322	16,602	1,775
Primary horsepower	37,614	20,851	3,091	5,248	1,339	4,131	2,954
Capital	$85,539,806	$39,401,429	$2,608,839	$12,588,754	$6,846,996	$17,676,716	$6,417,072
Salaries and wages	40,214,448	14,000,263	747,131	7,019,971	5,431,775	11,948,381	1,066,927
Salaries	8,020,757	1,929,451	147,553	1,766,943	924,254	2,989,875	262,681
Wages	32,193,691	12,070,812	599,578	5,253,028	4,507,521	8,958,506	804,246
Paid for contract work	258,473	19,825	100	32,513	109,008	60,807	27,220
Rent and taxes	2,606,845	324,626	44,531	443,934	454,837	1,255,956	82,961
Cost of materials	72,969,411	16,947,058	978,339	14,085,786	9,267,577	26,638,794	5,051,857
Value of products	138,622,200	37,349,744	1,944,484	25,443,501	18,593,221	48,361,908	6,929,342
Value added by manufacture (value of products less cost of materials)	65,652,789	20,402,686	966,145	11,357,715	9,325,644	21,723,114	1,877,485

[1] Data from abstract of the Census of Manufactures: 1914.

Hats, bonnets, and hoods—Fur—Imports by countries (fiscal years).

Imported from—	1912[1]		1913		1914	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Dozen.		Dozen.		Dozen.	
Austria-Hungary	10,434	$207,451	13,651	$290,399	13,656	$304,308
Belgium	9,386	100,997	5,381	50,111	4,510	43,435
France	14,138	264,779	7,328	153,835	5,401	103,947
Germany	3,952	66,648	1,987	37,493	1,347	26,392
Italy	3,597	48,052	6,371	80,618	4,586	64,929
England	14,719	196,782	9,209	149,575	6,181	113,036
All other	54	1,234	77	1,147	70	1,601
Total	56,280	885,943	44,004	763,178	35,751	657,648

[1] Included in "All other, etc.," prior to 1912.

Hats, bonnets, and hoods—Fur—Imports by countries (fiscal years)—Continued.

Imported from—	1915		1916		1917	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Dozen.		*Dozen.*		*Dozen.*	
Austria-Hungary	4,595	$95,009	298	$7,037	.....	.....
Belgium	569	8,889	522	3,849	.....	.....
France	4,254	81,733	3,026	57,954	4,544	$104,073
Germany	356	5,340	16	422	.....	.....
Italy	4,928	69,042	10,366	154,318	19,254	265,677
England	5,607	103,286	5,318	89,668	5,516	110,898
All other	86	1,188	35	465	83	1,429
Total	20,395	364,487	19,581	313,713	29,397	482,077

Imported from—	1918		1919		1920	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Dozen.		*Dozen.*		*Dozen.*	
France	3,901	$104,526	2,928	$108,586	.....	.....
Italy	16,986	315,926	10,924	268,550	.....	.....
England	1,991	56,860	489	18,097	.....	.....
All other	39	724	13	350	.....	.....
Total	22,917	478,036	14,354	395,583	20,777	623,279

Hats, bonnets, and hoods—Fur—Imports by countries (calendar years).

Imported from—	1918		1919		1920	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Dozen.		*Dozen.*		*Dozen*	
France	3,257	$98,768	3,572	$121,792	.....	.....
Italy	16,479	327,511	10,600	323,714	.....	.....
England	997	29,854	839	37,288	.....	.....
All other	14	515	55	1,895	.....	.....
Total	20,747	456,648	15,066	484,689	30,735	$1,159,492

Hats, bonnets, or hoods for men's, women's, boys', or children's wear, trimmed or untrimmed, including bodies, hoods, plateaux, forms, or shapes for hats or bonnets composed wholly or in chief value of the fur of the rabbit, beaver, or other animals—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Dozen.				*Per cent.*
1907	$2 per dozen plus 20 per cent.[1]	1,881	$4,907	$4,743	$2.60	96.66
	$3 per dozen plus 20 per cent.[2]	9,035	77,155	42,535	8.54	55.13
	$5 per dozen plus 20 per cent.[3]	5,046	69,032	39,039	13.68	56.55
	$7 per dozen plus 20 per cent.[4]	3,233	82,402	39,108	25.49	47.46
	Total, 1907	19,195	233,496	125,425	12.16	53.72
1908	$2 per dozen plus 20 per cent.[1]	1,454	4,007	3,710	2.76	92.59
	$3 per dozen plus 20 per cent.[2]	9,501	80,511	44,604	8.47	55.40
	$5 per dozen plus 20 per cent.[3]	7,141	99,937	55,693	13.99	55.73
	$7 per dozen plus 20 per cent.[4]	3,797	95,108	45,603	25.05	47.95
	Total, 1908	21,892	279,562	149,610	12.77	53.51
1909	$2 per dozen plus 20 per cent.[1]	272	842	714	3.09	84.83
	$3 per dozen plus 20 per cent.[2]	22,275	206,572	108,139	9.27	52.35
	$5 per dozen plus 20 per cent.[3]	9,095	87,681	48,013	14.39	64.75
	$7 per dozen plus 20 per cent.[4]	4,072	102,821	49,071	25.25	47.72
	Total, 1909	32,714	397,916	205,937	12.16	51.75
1910[5]	$2 per dozen plus 20 per cent.[6]	19	83	55	4.37	65.78
	$3 per dozen plus 20 per cent.[7]	2,186	20,616	10,682	9.43	51.81
	$5 per dozen plus 20 per cent.[8]	81	1,060	619	13.09	58.44
	$7 per dozen plus 20 per cent.[4]	¾	18	9	24.00	49.12
	Total, 1910[5]	2,286¾	21,777	11,365	9.52	52.19
1910[7]	$1.50 per dozen plus 20 per cent.[6]	149	499	324	3.34	64.94
	$3 per dozen plus 20 per cent.[8]	17,916	143,733	82,496	8.02	57.39
	$5 per dozen plus 20 per cent.[9]	13,943	176,699	105,055	12.67	59.45
	$7 per dozen plus 20 per cent.[10]	8,646	221,898	104,902	25.66	47.27
	Total, 1910[7]	40,654	542,829	292,777	13.35	53.90
1911	$1.50 per dozen plus 20 per cent.[6]	20	66	44	3.15	67.56
	$3 per dozen plus 20 per cent.[8]	15,308	120,696	70,065	7.88	58.05
	$5 per dozen plus 20 per cent.[9]	15,410	215,098	120,071	13.96	55.82
	$7 per dozen plus 20 per cent.[10]	10,261	258,040	123,439	25.15	47.84
	Total, 1911	40,999	593,900	313,619	14.48	52.81

[1] Valued at not more than $5 per dozen.
[2] Valued at more than $5 per dozen and not more than $10 per dozen.
[3] Valued at more than $10 per dozen and not more than $20 per dozen.
[4] Valued at more than $20 per dozen.
[5] July 1 to Aug. 5, 1909.
[6] Valued at not more than $4.50 per dozen.
[7] Aug. 6, 1909, to June 30, 1910.
[8] Valued at more than $4.50 per dozen and not more than $9 per dozen.
[9] Valued at more than $9 per dozen and not more than $18 per dozen.
[10] Valued at more than $18 per dozen.

Hats, bonnets, or hoods for men's, women's, boys', or children's wear, trimmed or untrimmed, including bodies, hoods, plateaux, forms, or shapes for hats or bonnets composed wholly or in chief value of the fur of the rabbit, beaver, or other animals—Imports for consumption—Revenue—Continued.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Dozen.				*Per cent.*
1912	$1.50 per dozen plus 20 per cent.[6]	530	$1,865	$1,167	$3.52	62.60
	$3 per dozen plus 20 per cent.[8]	15,218	119,927	69,641	7.88	58.07
	$5 per dozen plus 20 per cent.[9]	22,944	339,542	182,630	14.80	53.79
	$7 per dozen plus 20 per cent.[10]	16,620	413,887	199,114	24.90	48.11
	Total, 1912	55,312	875,221	452,552	15.82	51.71
1913	$1.50 per dozen plus 20 per cent.[6]	298	992	646	3.32	65.15
	$3 per dozen plus 20 per cent.[8]	9,037	69,534	41,020	7.69	58.99
	$5 per dozen plus 20 per cent.[9]	18,961	287,068	152,223	15.14	53.03
	$7 per dozen plus 20 per cent.[10]	15,367	390,129	185,598	25.39	47.57
	Total, 1913	43,663	747,723	379,487	17.12	50.75
1914	$1.50 per dozen, 20 per cent.[6]	192	734	435	3.82	59.26
	$3 per dozen, 20 per cent.[8]	2,412	17,652	10,766	7.32	60.99
	$5 per dozen, 20 per cent.[9]	5,665	90,859	46,497	16.04	51.18
	$7 per dozen, 20 per cent.[10]	10,825	275,716	130,918	25.47	47.48
	45 per cent[11]	17,631	279,756	125,890	15.87	45.00
	Total 1914	36,725	664,717	314,506	18.10	47.31
1915	45 per cent	18,618	379,937	170,972	20.41	45.00
1916	do	19,527	313,231	140,954	16.04	45.00
1917	do	30,063	497,626	223,932	16.55	45.00
1918	do	22,936	466,049	209,722	20.32	45.00
1919	do	14,786	405,431	182,444	27.42	45.00
1920	do	18,115	579,888	260,950	32.01	45.00
1920[12]	do	28,039	1,094,373	492,467	39.03	45.00
1921[12]	do	6,227	174,102	78,346	27.96	45.00

[6] Valued at not more than $4.50 per dozen.
[8] Valued at more than $4.50 per dozen and not more than $9 per dozen.
[9] Valued at more than $9 per dozen and not more than $18 per dozen.
[10] Valued at more than $18 per dozen.
[11] Oct. 4, 1913, to June 30, 1914.
[12] Calendar year.
[12] Six months ended June 30, 1921.

Hats and hat materials—Felt [1]*—Domestic exports (calendar years).*

Exported to—	1918	1919	1920
Canada	$556,264	$668,805	.....
Mexico	255,862	301,598	.....
Cuba	176,217	188,712	.....
Argentina	44,546	80,748	.....
Philippine Islands	86,816	179,399	.....
Peru	21,117	20,336	.....
All other	154,094	280,270	.....
Total	1,273,799	1,699,532	$3,145,224

[1] For men and boys—not separately stated prior to 1918.

Wholesale prices of hatter's fur and fur-felt hats, by months, quarters, and years, 1913–1918.[1]

	Hatter's fur.						Fur-felt hats.			
		Coney.								
	/001H hair, best	Scotch, best B. C. B.	French, best, extra.	Best B.C.B., unpulled.	French, best mottled.	French, best, unpulled.	Knox.	Stetson	A fur felt.	No. 1 fur felt.
Market	New York.	New York.	New York.	New York.	New York.	New York.	New York.	Phila.	Conn.	Conn.
Unit	Pound.	Pound.	Pound.	Pound.	Pound.	Pound.	Dozen.	Dozen.	Dozen.	Dozen.
Base price	$3.2417	$1.8708	$1.4208	$1.2208	$1.1979	$0.9750	$39.0000	$30.0000	$12.0000	$16.5000
1913—Year	4.6375	1.9917	1.5250	1.3125	1.3458	1.0917	39.0000	30.0000	12.0000	16.5000
Quarters—										
First	5.0833	2.0000	1.6000	1.3167	1.4500	1.1500	39.0000	30.0000	12.0000	16.5000
Second	5.2500	2.0000	1.5333	1.3500	1.3667	1.1167	39.0000	30.0000	12.0000	16.5000
Third	4.7167	2.0000	1.5000	1.3000	1.3333	1.0833	39.0000	30.0000	12.0000	16.5000
Fourth	3,5000	1,9667	1,4667	1,2833	1,2333	1,0167	39.0000	30.0000	12.0000	16.5000
Months—										
January	5.0000	2.0000	1.6000	1.3000	1.4500	1.1500	39.0000	30.0000	12.0000	16.5000
February	5.0000	2.0000	1.6000	1.3000	1.4500	1.1500	39.0000	30.0000	12.0000	16.5000
March	5.2500	2.0000	1.6000	1.3500	1.4500	1.1500	39.0000	30.0000	12.0000	16.5000
April	5.2500	2.0000	1.6000	1.3500	1.4500	1.1500	39.0000	30.0000	12.0000	16.5000
May	5.2500	2.0000	1.5000	1.3500	1.3000	1.1000	39.0000	30.0000	12.0000	16.5000
June	5,2500	2.0000	1.5000	1.3500	1.3500	1.1000	39.0000	30.0000	12.0000	16.5000
July	5.0000	2.0000	1.5000	1.3000	1.3500	1.0500	39.0000	30.0000	12.0000	16.5000
August	4,6500	2.0000	1.5000	1.3000	1.3500	1.1000	39.0000	30.0000	12.0000	16.5000
September	4.5000	2.0000	1.5000	1.3000	1.3000	1.1000	39.0000	30.0000	12.0000	16.5000
October	4,2500	2.0000	1.5000	1.3000	1.3000	1.1000	39.0000	30.0000	12.0000	16.5000
November	3.5000	1.9500	1.4500	1.3000	1.2000	1.0000	39.0000	30.0000	12.0000	16.5000
December	2.7500	1.9500	1.4500	1.2500	1.2000	.9500	39.0000	30.0000	12.0000	16.5000
1914—Year	2.5167	1.7833	1.3708	1.1458	1.1229	.9146	39.0000	30.0000	12.0000	16.5000
Quarters—										
First	2.4000	1.7667	1.3667	1.1500	1.1000	.9000	39.0000	30.0000	12.0000	16.5000
Second	2,3500	1.7500	1.3500	1.1500	1.1250	.9000	39.0000	30.0000	12.0000	16.5000
Third	2.5667	1.7833	1.3667	1.1833	1.1083	.9250	39.0000	30.0000	12.0000	16.5000
Fourth	2.7500	1.8333	1.4000	1.1000	1.1583	.9333	39.0000	30.0000	12.0000	16.5000
Months—										
January	2.5000	1.8000	1.4000	1.1500	1.1500	.9000	39.0000	30.0000	12.0000	16.5000
February	2.3500	1.7500	1.3500	1.1500	1.0750	.9000	39.0000	30.0000	12.0000	16.5000
March	2.3500	1.7500	1.3500	1.1500	1.0750	.9000	39.0000	30.0000	12.0000	16.5000
April	2.3500	1.7500	1.3500	1.1500	1.1250	.9000	39.0000	30.0000	12.0000	16.5000
May	2.3500	1.7500	1.3500	1.1500	1.1250	.9000	39.0000	30.0000	12.0000	16.5000
June	2.3500	1.7500	1.3500	1.1500	1.1250	.9000	39.0000	30.0000	12.0000	16.5000
July	2.3500	1.7500	1.3000	1.1500	1.0250	.8500	39.0000	30.0000	12.0000	16.5000
August	2.3500	1.7500	1.3000	1.1500	1.0500	.8250	39.0000	30.0000	12.0000	16.5000
September	3.0000	1.8500	1.5000	1.2500	1.2500	1.1000	39.0000	30.0000	12.0000	16.5000
October	3.0000	1.8500	1.4500	1.2000	1.2500	1.0000	39.0000	30.0000	12.0000	16.5000
November	2.7500	1.8500	1.4000	1.1000	1.1500	.9500	39.0000	30.0000	12.0000	16.5000
December	2.5000	1.8000	1.3500	1.0000	1.0750	.8500	39.0000	30.0000	12.0000	16.5000

[1] Price Bulletin No. 27, War Industries Board.

Wholesale prices of hatter's fur and fur-felt hats, by months, quarters, and years, 1913–1918—Continued.

	Hatter's fur.						Fur-felt hats.			
		Coney.								
	001H hair, best.	Scotch, best B. C. B.	French, best, extra.	Best B.C.B., unpulled.	French, best mottled.	French, best, unpulled.	Knox.	Stetson.	A fur felt.	No. 1 fur felt.
Market	New York.	New York.	New York.	New York.	New York.	New York.	New York.	Phila.	Conn.	Conn.
Unit	Pound.	Pound.	Pound.	Pound.	Pound.	Pound.	Dozen.	Dozen.	Dozen.	Dozen.
Base price	$3.2417	$1.8708	$1.4208	$1.2208	$1.1979	$0.9750	$39.0000	$30.0000	$12.0000	$16.5000
1915—Year	2.7083	1.6500	1.3083	.9708	1.0167	.7750	39.0000	30.0000	12.0000	16.5000
Quarters—										
First	2.5000	1.6500	1.3167	1.0000	1.0167	.7667	39.0000	30.0000	12.0000	16.5000
Second	2.5833	1.6000	1.3000	.9500	1.0000	.7500	39.0000	30.0000	12.0000	16.5000
Third	2.7500	1.6167	1.3000	.9500	1.0000	.7667	39.0000	30.0000	12.0000	16.5000
Fourth	3.0000	1.7333	1.3167	.9833	1.0500	.8167	39.0000	30.0000	12.0000	16.5000
Months—										
January	2.5000	1.7500	1.3500	1.0000	1.0500	.8000	39.0000	30.0000	12.0000	16.5000
February	2.5000	1.6000	1.3000	1.0000	1.0000	.7500	39.0000	30.0000	12.0000	16.5000
March	2.5000	1.6000	1.3000	1.0000	1.0000	.7500	39.0000	30.0000	12.0000	16.5000
April	2.5000	1.6000	1.3000	.9500	1.0000	.7500	39.0000	30.0000	12.0000	16.5000
May	2.5000	1.6000	1.3000	.9500	1.0000	.7500	39.0000	30.0000	12.0000	16.5000
June	2.7500	1.6000	1.3000	.9500	1.0000	.7500	39.0000	30.0000	12.0000	16.5000
July	2.7500	1.6000	1.3000	.9500	1.0000	.7500	39.0000	30.0000	12.0000	16.5000
August	2.7500	1.6000	1.3000	.9500	1.0000	.7500	39.0000	30.0000	12.0000	16.5000
September	2.7500	1.6500	1.3000	.9500	1.0000	.8000	39.0000	30.0000	12.0000	16.5000
October	2.7500	1.6500	1.3000	.9500	1.0000	.8000	39.0000	30.0000	12.0000	16.5000
November	3.0000	1.7500	1.3000	.9500	1.0500	.8000	39.0000	30.0000	12.0000	16.5000
December	[1] 3.2500	1.8000	1.3500	1.0500	1.1000	.8500	39.0000	30.0000	12.0000	16.5000
1916—Year	4.3125	2.4792	1.8375	1.5792	1.5417	1.2833	39.0000	30.0000	12.9167	17.0833
Quarters—										
First	3.6667	1.9667	1.5333	1.2167	1.2500	1.0500	39.0000	30.0000	12.0000	16.5000
Second	4.3333	2.2500	1.7000	1.4333	1.4167	1.1667	39.0000	30.0000	12.0000	16.5000
Third	4.5000	2.6333	1.8667	1.6333	1.5333	1.3333	39.0000	30.0000	12.6667	17.0000
Fourth	4.7500	3.0667	2.2500	2.0333	1.9667	1.5833	39.0000	30.0000	15.0000	18.3333
Months—										
January	3.5000	1.9000	1.5000	1.2000	1.2000	1.0000	39.0000	30.0000	12.0000	16.5000
February	3.5000	1.9000	1.5000	1.2000	1.2500	1.0500	39.0000	30.0000	12.0000	16.5000
March	4.0000	2.1000	1.6000	1.2500	1.3000	1.1000	39.0000	30.0000	12.0000	16.5000
April	4.0000	2.1000	1.6000	1.3000	1.3500	1.1000	39.0000	30.0000	12.0000	16.5000
May	4.5000	2.2500	1.7500	1.4000	1.4500	1.2000	39.0000	30.0000	12.0000	16.5000
June	4.5000	2.4000	1.7500	1.6000	1.4500	1.2000	39.0000	30.0000	12.0000	16.5000
July	4.5000	2.5000	1.8500	1.6000	1.5000	1.2500	39.0000	30.0000	12.0000	16.5000
August	4.5000	2.7000	1.8500	1.6000	1.5000	1.3500	39.0000	30.0000	12.0000	16.5000
September	4.5000	2.7000	1.9000	1.7000	1.6000	1.4000	39.0000	30.0000	14.0000	18.0000
October	4.7500	2.7000	2.0000	1.7500	1.7500	1.4000	39.0000	30.0000	14.0000	18.0000
November	4.7500	3.0000	2.2500	2.0000	1.9000	1.6000	39.0000	30.0000	15.5000	18.5000
December	4.7500	3.5000	2.5000	2.3500	2.2500	1.7500	39.0000	30.0000	15.5000	18.5000
1917—Year	5.6146	4.5000	3.5854	3.2625	3,0896	2.4521	41.7500	33.5000	16.9167	19.9167
Quarters—										
First	5.3333	4.0000	3.1333	2.8833	2.5333	2.1667	41.0000	31.0000	15.5000	18.5000
Second	5.5000	4.5000	3.4333	3.0417	2.9167	2.3167	42.0000	33.0000	15.5000	18.5000
Third	5.5000	4.5000	3.6000	3.2500	3.1333	2.4000	42.0000	34.0000	15.5000	18.5000
Fourth	6.1250	5.0000	4.1750	3.8750	3.7750	2.9250	42.0000	36.0000	21.1667	24.1667
Months—										
January	5.2500	3.7500	2.9000	2.7500	2.3500	2.1000	39.0000	30.0000	15.5000	18.5000
February	5.2500	3.7500	3.2500	2.9000	2.5000	2.1000	42.0000	30.0000	15.5000	18.5000
March	5.5000	4.5000	3.2500	3.0000	2.7500	2.3000	42.0000	33.0000	15.5000	18.5000
April	5.5000	4.5000	3.4000	3.0000	2.8500	2.3000	42.0000	33.0000	15.5000	18.5000
May	5.5000	4.5000	3.4000	3.0000	2.9000	2.3000	42.0000	33.0000	15.5000	18.5000
June	[1] 5.5000	[1] 4.5000	[1] 3.5000	[1] 3.1250	[1] 3.0000	[1] 2.3500	42.0000	33.0000	15.5000	18.5000
July	5.5000	4.5000	3.6000	3.2500	3.1000	2.4000	42.0000	33.0000	15.5000	18.5000
August	5.5000	4.5000	3.6000	3.2500	3.1500	2.4000	42.0000	33.0000	15.5000	18.5000
September	5.5000	4.5000	3.6000	3.2500	3.1500	2.4000	42.0000	36.0000	15.5000	18.5000
October	5.7500	4.5000	3.8500	3.5000	3.3000	2.5000	42.0000	36.0000	15.5000	18.5000
November	[1] 6.1250	[1] 5.0000	[1] 4.1750	[1] 3.8750	[1] 3.7750	[1] 2.9250	42.0000	36.0000	24.0000	27.0000
December	6.5000	5.5000	4.5000	4.2500	4.2500	3.3500	42.0000	36.0000	24.0000	27.0000

[1] No prices quoted; interpolated.

Wholesale prices of hatter's fur and fur-felt hats, by months, quarters, and years, 1911–1918—Continued.

	Hatter's fur.						Fur-felt hats.			
		Coney.								
	/001H hair, best.	Scotch, best B. C. B.	French, best, extra.	/Best B.C.B., unpulled.	French, best mottled.	French, best, unpulled.	Knox.	Stetson.	A fur felt.	No. 1 fur felt.
Market	New York.	New York./	New York.	New York.	New York.	New York.	New York.	Phila.	Conn.	Conn.
Unit	Pound.	Pound.	Pound.	Pound.	Pound.	Pound.	Dozen.	Dozen.	Dozen.	Dozen.
Base price	$3.2417	$1.8708	$1.4208	$1.2208	$1.1979	$0.9750	$39.0000	$30.0000	$12.0000	$16.5000
1918—Year	9.0633	7.8750	6.2229	5.8229	5.1563	4.1042	53.0800	44.7500	27.0000	31.5000
Quarters—										
First	7.0000	6.5000	5.1000	4.7500	4.5000	3.5000	50.0000	38.0000	24.0000	27.0000
Second	8.6667	7.4000	6.3542	5.7917	5.1250	3.9167	54.0000	39.0000	24.0000	27.0000
Third	10.1667	8.6000	6.6875	6.3750	5.5000	4.5000	54.0000	51.0000	30.0000	36.0000
Fourth	10.5000	9.0000	6.7500	6.3750	5.5000	4.5000	54.0000	51.0000	30.0000	36.0000
Months—										
January	7.0000	6.2500	5.0000	4.7500	4.5000	3.5000	42.0000	36.0000	24.0000	27.0000
February	7.0000	7.0000	5.1500	4.7500	4.5000	3.5000	54.0000	39.0000	24.0000	27.0000
March	7.0000	6.2500	5.1500	4.7500	4.5000	3.5000	54.0000	39.0000	24.0000	27.0000
April	8.0000	7.0000	6.0000	5.2500	4.7500	3.5000	54.0000	39.0000	24.0000	27.0000
May	[1] 8.6667	[1] 7.4000	6.0000	6.0000	5.2500	4.0000	54.0000	39.0000	24.0000	27.0000
June	[1] 9.3333	[1] 7.8000	[1] 6.5625	[1] 6.1250	[1] 5.3750	[1] 4.2500	54.0000	39.0000	24.0000	27.0000
July	10.0000	[1] 8.2000	[1] 6.6250	[1] 6.2500	5.5000	4.5000	54.0000	51.0000	30.0000	36.0000
August	10.0000	[1] 8.6000	[1] 6.6875	[1] 6.3750	5.5000	4.5000	54.0000	51.0000	30.0000	36.0000
September	10.5000	9.0000	6.7500	6.5000	5.5000	4.5000	54.0000	51.0000	30.0000	36.0000
October	10.5000	9.0000	6.7500	6.5000	5.5000	4.5000	54.0000	51.0000	30.0000	36.0000
November	[1] 10.5000	[1] 9.0000	[1] 6.7500	[1] 6.3750	[1] 5.5000	[1] 4.5000	54.0000	51.0000	30.0000	36.0000
December	10.5000	9.0000	6.7500	6.2500	5.5000	4.5000	54.0000	51.0000	30.0000	36.0000

[1] No prices quoted; interpolated.

Fur hats, bonnets, or hoods—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	400	Bonnets, hats, and hoods for men, women, and children, composed of * * * other material, not specially enumerated or provided for in this act.	30 per cent ad valorem.
1890	451	Hats for men's, women's, and children's wear, composed of the fur of the rabbit, beaver, or other animals, or of which such fur is the component material of chief value, wholly or partially manufactured, including fur hat bodies.	55 per cent ad valorem.
1894	335	....do....	40 per cent ad valorem.
1897	432	Hats, bonnets, or hoods, for men's, women's, boys', or children's wear, trimmed or untrimmed, including bodies, hoods, plateaux, forms or shapes, for hats or bonnets, composed wholly or in chief value of fur of the rabbit, beaver, or other animals:	
		Valued at not more than $5 per dozen	$2 per dozen and 20 per cent ad valorem.
		Valued at more than $5 per dozen and not more than $10 per dozen.	$3 per dozen and 20 per cent ad valorem.
		Valued at more than $10 per dozen and not more than $20 per dozen.	$5 per dozen and 20 per cent ad valorem.
		Valued at more than $20 per dozen	$7 per dozen and 20 per cent ad valorem.
1909	446	Hats, bonnets, or hoods, for men's, women's, boys', or children's wear, trimmed or untrimmed, including bodies, hoods, plateaux, forms or shapes, for hats or bonnets, composed wholly or in chief value of fur of the rabbitt, beaver, or other animals:	
		Valued at not more than $4.50 per dozen	$1.50 per dozen and 20 per cent ad valorem.
		Valued at more than $4.50 per dozen and not more than $9 per dozen.	$3 per dozen and 20 per cent ad valorem.
		Valued at more than $9 per dozen and not more than $18 per dozen.	$5 per dozen and 20 per cent ad valorem.
		Valued at more than $18 per dozen	$7 per dozen and 20 per cent ad valorem.
1913	354	Hats, bonnets, or hoods, for men's, women's, boys', or children's wear, trimmed or untrimmed, including bodies, hoods, plateaux, forms or shapes, for hats or bonnets, composed wholly or in chief value of fur of the rabbit, beaver, or other animals.	45 per cent ad valorem.

COURT AND TREASURY DECISIONS.

In applying the provision in paragraph 432 of the act of 1897 for "hats, * * * trimmed * * * composed wholly or in chief value of fur," the composition of the hats was determined by reference to the whole hat, including the trimming, rather than by referring to the body of the hat alone, so that where hats, the bodies of which were fur, were so trimmed that the silk trimming was the component material of chief value, the hats were held dutiable under paragraph 390 of the silk schedule. (Rheims Co. *v.* United States, 160 Fed., 925, of 1908.)

A similar question arose under the acts of 1909 and 1913 upon hats of straw trimmed with silk, etc. The trimming of the hat was declared to be an entity in determining the classification. (United States *v.* Lord, 4 Ct. Cust. Appls., 322, of 1913; Aitken *v.* United States, 6 Ct. Cust. Appls., 232, of 1910.)

Rabbit-fur hoods used by automobilists are dutiable under paragraph 384 rather than as fur wearing apparel. (Abstract 32941, T. D. 33594, of 1913.) Caps of rabbit fur are not within paragraph 384, not being hats in either customs practice or common parlance. (G. A 4708, T. D. 22228, of 1900.)

UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPHS 351, 352, and 353 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

HAIR AND MANUFACTURES OF HAIR

Paragraph 351:
Human Hair

Paragraph 352:
Curled Hair

Paragraph 353:
Haircloth

Paragraph 503:
Horse, Cattle, and Other Animal Hair, n. s. p. f.

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and index" the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Joseph M. Donohoe, of the Commission's staff, and of others.

General Information.

1913 TARIFF PARAGRAPH.

PAR. 351. Human hair, raw, 10 per centum ad valorem; if cleaned or commercially known as drawn but not manufactured, 20 per centum ad valorem; manufactures of human hair, including nets and netting, or of which human hair is the component material of chief value, not specially provided for in this section, 35 per centum ad valorem.

DESCRIPTION AND USES.

Human hair, other than the natural growth of the wearers, has been worn through the centuries for the purpose of adornment and to conceal baldness. At the present time it is manufactured into various products, the most important being those used in the hair-dressing industry, such as wigs, switches, bangs, hair nets, etc. Wigs and transformations are used extensively by theatrical folk and by men for concealing baldness. Women generally are users of human hair, additional to the natural growth, in the arrangement of their coiffures, and in the use of nets for maintaining the shape of the coiffures. Human hair is also used in the making of hair trinkets, watch chains, bracelets, etc. This use is unimportant.

An important and recent development of the use of human hair, due to war conditions, is the making of hair press cloth for use in extracting oils from cotton seed, flaxseed, etc. The greater amount of raw hair is used for this purpose.

MATERIAL.

Human hair is known to the trade by four grades.

Selected first quality is strictly first-class hair, all of which has been cut from the head; first quality is a mixture of cut hair and combings, usually 50 per cent of each; second quality consists entirely of combings, properly rooted, either drawn from the head in the process of combing or obtained from the other grades of hair in the process of heckling or drawing. Oriental and Russian hair, which is coarse, heavy, and oily, is known as third quality. Rooting the hair is placing all the root ends together; drawing or heckling is sorting or arranging the hair according to length.

SOURCES.

The sources of raw material are continental Europe and the Orient, China now being the greatest source of supply.

Before using the coarse, heavy, oily hair from the Orient and Russia, it is necessary to dye or bleach it. It is used principally in the manufacture of fabrics and for the cheapest grades of wigs, curls, etc., and for hair nets.

The finer grades of hair come from the peasants of Norway, and the countries of central and southern Europe. The peasant families save the hair detached from the head in the process of combing and sell it to the buyers. Also, especially in southern France, it is customary for the peasant girls to sell the entire head of hair. The

hair obtained by cutting in this manner is the very best grade and is used for the highest and most expensive quality of wigs. Some hair is also obtained from the heads of convicts.

Jute is sometimes used as a substitute for human hair in making wigs for theatrical purposes. It has the appearance of hair when made in this manner, but has poor wearing qualities.

PROCESS.

The raw hair is washed, combed, drawn, or heckled, sorted into lengths, and then sterilized by boiling. This is slow and tedious hand work, and is done abroad by hand labor. If curls or waves are desired the hair is wrapped around small sticks of the desired size. It is then boiled, after which it is baked. The curl or wave remains after the stick is removed.

In making switches, the method in general use is to weave the hair (several strands at a time) on three strings, the hair being the weft and the strings the warp. When the required amount is woven the strings are pulled taut, wrapped around the root ends and tightly tied. Other articles are made with an elaboration of this method, additional strings being added to give the desired width for wigs, bangs, etc. For the highest class articles this weaving is done on special high-grade lace, the lace being held taut in a frame. This weaving on lace is called ventilation. It is practically all handwork, the simplest kind of a stand for holding the strings being used. The lace for ventilation is woven in France by hand and is very expensive.

DOMESTIC PRODUCTION.

The human-hair industry in the United States consists entirely of manufacturing human-hair products. No domestic hair is saved or collected for this purpose, all raw material being imported.

The value of articles of human hair manufactured in the United States in 1909 was $11,216,000, but this declined to $3,335,000 in 1914. This large decrease is attributed mainly to changes of style, which is considered the controlling factor in the industry. Figures for later production are not available, but from information furnished by the trade, the production of hair nets, wigs, etc., in the United States has decreased. Hair press cloth manufactures have increased, but, as stated, this is a recent development not included in the above figures.

ORGANIZATION.

In 1914 there were 205 establishments engaged in this industry, employing 1,193 wage earners, with a total capitalization of $2,543,000. The individual form of ownership predominated, there being 137 such establishments, employing 608 wage earners and producing articles to the value of $1,529,000. Of the remaining establishments 28 were corporate and 40 of other forms of ownership. The business may be conducted on a small scale, as 26 of the establishments employed no wage earners and 82 of them had a production of less than $5,000 per year. Forty establishments had production of more than $20,000 per year, while four exceeded $100,000.

No domestic exports are shown in official statistics.

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FOREIGN PRODUCTION.

Detailed figures are not available for the production of human-hair goods abroad, but it may be stated that most of the better qualities of toupees, switches, wigs, etc., are made in Europe. Hair nets were formerly made by the home workers in the central and southern countries of Europe, but during the war this industry shifted to China, which is now the greatest source of supply for this article.

IMPORTS.

Imports of human hair for consumption declined from $3,500,000 in 1910 to $500,000 in 1915, but since then have increased to $7,574,809 in 1920. Prior to 1919 the largest single item of import was raw hair, but in 1919 and 1920 the manufactured articles value much in excess of the unmanufactured hair. This excess is caused by the tremendous increase in the value of hair nets imported.

TARIFF HISTORY.

Under the tariff of 1883 raw and uncleaned hair paid a duty of 20 per cent ad valorem. In all subsequent acts until 1913 the product was admitted free. In 1913 a duty of 10 per cent ad valorem was imposed. Under the act of 1883 the cleaned and drawn hair, not manufactured, was dutiable at 30 per cent ad valorem. In all subsequent acts, including the present law, the duty has been 20 per cent ad valorem. The manufactures of human hair in all the tariff acts from 1883 to the present time, with the exception of the act of 1894, when the rate was 30 per cent, have paid a duty of 35 per cent.

COMPETITIVE CONDITIONS AND TARIFF CONSIDERATIONS.

No serious competitive or tariff problem is presented with regard to manufactures of hair or cleaned but unmanufactured hair. The principal item of manufactures of hair is "nets and netting." These are made principally by home work in China, and, while some higher priced nets are made in America, the viewpoint of the trade is that the cheaper nets could not economically be made here.

With regard to raw uncleaned hair a question arises, with respect to the recently developed hair press cloth industry, as to the duty of 10 per cent on raw hair in relation to the duty of 15 cents per square yard on hair press cloth (par. 353). Press cloth manufacturers have asked an increased duty on the press cloth, stating that the duty on raw hair is considerably higher with regard to the hair content than the 15 cents per square yard duty on the manufactured article. This contention is covered in more detail in the Tariff Information Survey on the Hair Press Cloth Industry.

Hair work[1]*—Production in United States.*

Year and State.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.
United States:						
1914	205	1,193	$2,543,000	$581,000	$1,529,000	$3,335,000
1909	250	3,534	4,716,000	1,610,000	6,081,000	11,216,000
1904	125	863	1,132,000	335,000	728,000	1,782,000
1899	158	820	760,000	287,000	496,000	1,406,000
1889	492	1,397	1,363,000	490,000	846,000	2,489,000
1879	299	1,172	613,000	323,000	667,000	1,468,000
1869	230	1,651	767,000	416,000	883,000	1,972,000
1859	44	155	73,000	44,000	78,000	237,000
1849	25	108	34,000	26,000	36,000	90,000
States, 1914:						
California	14	62	44,000	39,000	29,000	120,000
Colorado	5	28	42,000	11,000	8,000	32,000
Illinois	27	176	379,000	97,000	282,000	602,000
Massachusetts	5	16	12,000	7,000	14,000	42,000
Michigan	5	12	10,000	6,000	5,000	26,000
Missouri	3	10	7,000	5,000	8,000	25,000
New York	90	635	1,603,000	296,000	1,033,000	2,023,000
Ohio	7	27	23,000	13,000	8,000	46,000
Pennsylvania	16	93	232,000	50,000	76,000	219,000
Utah	6	6	13,000	3,000	4,000	12,000
All other States	27	128	178,000	54,000	62,000	188,000

[1] Establishments in this classification clean, bleach, curl, and otherwise prepare human hair, including that of Chinese and Japanese, mohair, and yak, horse, camel, and other hairs, and manufacture them into articles of adornment. The products include ornamental hair work, puffs, rats, refined yak hair, rolls, theatrical and other wigs, toupees, transformations, foundations, switches, fronts, braids, beards, bangs, turbans, and turban pads, waves, and wavy hair for switches and wigs. Prior to 1899 the returns included small local establishments, manufacturing chiefly to individual order. In addition to the products covered by the table, hair work to the value of $11,615 was reported for 1914 by establishments assigned to other industries, principally millinery and lace goods.

Imports by countries.

HUMAN HAIR, UNCLEANED.

[Fiscal years.]

Imported from—	1910		1911		1912	
	Pounds.[1]	Value.	Pounds.	Value.	Pounds.	Value.
Austria-Hungary		$407,643	28,068	$234,868	18,301	$172,004
France		78,740	3,209	27,769	643	3,536
Germany		405,611	49,017	144,344	43,157	104,556
Italy		791,020	135,907	563,211	101,967	906,694
Russia in Europe		155,530	4,386	39,437	1,076	6,447
England		144,633	129,258	140,311	143,534	111,233
China		232,623	523,159	299,184	199,110	79,288
Hongkong		533,574	429,870	437,838	444,324	256,484
Japan		93,812	367,573	222,298	46,416	18,940
Belgium		1,653	576	1,373		
Netherlands		1,777	203	1,600	120	1,113
All other		1,069	1,107	2,303	1,668	693
Total		2,847,685	1,672,333	2,114,536	1,000,316	1,660,988

[1] Quantity not stated prior to 1911.

Imports by countries—Continued.

HUMAN HAIR, UNCLEANED—Continued.

Imported from—	1913		1914		1915	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Austria-Hungary	23,376	$193,587	33,616	$101,070	2,574	$23,211
France	51,717	19,277	36,215	22,367	3,222	1,798
Germany	106,615	158,498	115,322	83,235	19,866	30,147
Italy	139,638	1,283,784	22,434	141,875	23,013	117,009
Russia in Europe	1,199	8,782	197	1,522	11	179
England	367,318	329,620	432,870	188,356	139,855	43,485
China	324,433	172,138	167,390	60,370	361,501	70,401
Hongkong	443,047	325,395	104,972	51,557	84,710	18,973
Japan	63,960	32,080	7,808	3,157	29	63
Belgium	6,130	5,425				
Netherlands	111	1,276	141	1,257	57	729
All other	1,798	642	265	66	14	89
Total	1,529,342	2,530,504	921,230	654,832	534,852	306,084

Imported from—	1916		1917		1918	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Austria-Hungary	7	$141				
France	1,789	1,516	15,099	$6,793	73	$482
Germany	1,717	15,436	278	934		
Italy	39,125	201,519	53,345	209,969	37,126	123,693
Russia in Europe			20	120		
England	383,967	70,624	584,247	170,290	349,808	137,144
China	433,896	73,694	319,078	84,535	1,004,607	356,427
Hongkong	95,690	28,296	265,360	119,124	576,332	214,231
Japan	76	23	180	297	5,513	16,773
All other	19	38	3,744	9,847	5,884	4,444
Total	956,286	391,287	1,241,351	601,909	1,979,343	853,193

[Calendar years.]

Imported from—	1918		1919		1920	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Austria-Hungary			1,640	$13,381		
France			44	1,132		
Germany			221	880		
Italy	56,875	$199,021	103,192	506,809		
England	99,435	69,323	421,995	172,064		
China	869,980	339,651	1,099,910	463,103		
Hongkong	430,700	175,508	468,051	226,983		
Japan	17,333	5,333	20	11		
Belgium			220	2,221		
All other	5,657	3,354	1,463	6,936		
Total	1,479,980	792,190	2,096,756	1,393,520	2,343,409	1,610,762

Imports by countries—Continued.

HUMAN HAIR, CLEANED, AND MANUFACTURES OF.

[Fiscal years.]

Imported from—	1912 [1]	1913	1914	1915	1916	1917	1918
Austria-Hungary	$40,196	$52,354	$23,299	$38,906	$17,078	.....	.....
France	15,330	18,201	19,424	25,296	8,660	$15,043	$7,961
Germany	91,310	95,244	98,890	90,130	41,079	1,555	.....
Italy	491	274	14,073	13,551	7,822	34,930	15,576
Netherlands	.....	306	40	3,833	327	.....	.....
England	34,438	24,897	30,163	25,730	40,535	52,176	29,199
Russian Europe	18	26	501	631	.....	.....	.....
China	4,855	1,930	824	4,938	182,048	486,987	580,777
Hongkong	3,966	1,565	4,690	84	2,678	1,504	1,642
Japan	2,593	2,025	4,466	2,665	2,519	3,336	3,225
Belgium	389	813	726	.....	.....	.....	.....
All other	2,613	509	844	3,012	15,411	4,443	4,974
Total	196,199	198,134	197,940	208,776	318,157	598,964	643,354

[Calendar years.]

Imported from—	1918	1919	1920
France	$11,761	$13,719	.....
Italy	19,752	36,071	.....
England	31,791	136,128	.....
China	709,109	2,031,051	.....
Hongkong	6,150	4,510	.....
Japan	5,437	3,191	.....
Belgium	.....	594	.....
All other	3,619	16,875	.....
Total	787,619	2,242,139	$6,637,804

[1] Not separately stated prior to 1912.

Human hair: Imports for consumption—Revenue.

RAW, UNCLEANED, NOT DRAWN.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1908	Free	.....	$722,241	.....	.....	.....
1909	....do	.....	1,039,690	.....	.....	.....
1910	....do	1,831,730	2,849,077	.....	$1.56	.....
1911	....do	1,676,194	2,121,477	.....	1.27	.....
1912	....do	1,000,963	1,661,060	.....	1.66	.....
1913	....do	1,602,136	2,544,294	.....	1.59	.....
1914	....do	415,910	338,411	.....	.81	.....
		ASIATIC.				
1914	10 per cent	442,679	$159,154	$15,915	$0.359	10.00
1915	....do	456,492	141,938	14,193	.319	10.00
1916	....do	944,502	169,242	16,924	.179	10.00
1917	....do	1,115,151	345,949	34,584	.309	10.00
1918	....do	1,966,106	737,443	73,744	.375	10.00
1918 [1]	....do	1,483,385	588,081	58,808	.397	10.00
1919 [1]	....do	1,936,876	839,752	83,975	.434	10.00
1920 [1]	....do	1,947,624	1,000,078	100,007	.513	10.00
1921 [2]	....do	471,632	226,414	22,641	.....	10.00

[1] Calendar year.
[2] Six months ended June 30, 1921.

Human hair: Imports for consumption—Revenue—Continued.

RAW, UNCLEANED, NOT DRAWN—Continued.

ALL OTHER.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1914	10 per cent	33,706	$145,274	$14,527	$4.31	10.00
1915	do	65,544	160,695	16,069	2.45	10.00
1916	do	58,712	232,015	23,201	3.94	10.00
1917	do	188,425	280,519	28,051	1.48	10.00
1918	do	47,595	136,373	13,637	2.86	10.00
1918 [1]	do	64,346	203,589	20,359	3.16	10.00
1919 [1]	do	133,112	524,247	52,425	3.94	10.00
1920 [1]	do	255,582	534,230	53,243	2.09	10.00
1921 [2]	do	27,336	135,581	13,558		10.00

CLEANED OR DRAWN.

1908	20 per cent		$49,245	$9,849		20.00
1909	do		88,617	17,723		20.00
1910	do		141,583	28,316		20.00
1911	do		90,665	18,133		20.00
1912	do	21,613	52,633	10,526	$2.44	20.00
1913	do	7,608	36,713	7,342	4.83	20.00
1914	do	2,254	6,242	1,248	2.77	20.00

ASIATIC.

1914	20 per cent	27,312	$9,468	$1,893	$0.347	20.00
1915	do	10,250	5,983	1,196	.583	20.00
1916	do	8,080	2,100	420	.259	20.00
1917	do	45,614	8,373	1,674	.183	20.00
1918	do	31,108	14,865	2,973	.477	20.00
1918 [1]	do	12,467	8,554	1,711	.710	20.00
1919 [1]	do	33,152	22,190	4,438	.669	20.00
1920 [1]	do	53,374	52,790	10,558	.989	20.00
1921 [2]	do	20,552	36,941	7,388		20.00

ALL OTHER.

1914	20 per cent	2,576	$20,262	$4,052	$7.86	20.00
1915	do	4,070	18,392	3,678	4.51	20.00
1916	do	1,028	7,568	1,513	7.36	20.00
1917	do	4,679	24,402	4,880	5.23	20.00
1918	do	5,864	16,209	3,241	2.76	20.00
1918 [1]	do	6,193	20,368	4,074	3.29	20.00
1919 [1]	do	35,848	50,302	10,060	1.40	20.00
1920 [1]	do	15,562	64,426	12,885	4.14	20.00
1921 [2]	do	11,661	36,957	7,391		20.00

MANUFACTURED.

1908	35 per cent		$301,876	$105,656		35.00
1909	do		581,792	203,625		35.00
1910	do		594,053	207,917		35.00
1911	do		342,706	119,945		35.00
1912	do		151,891	53,161		35.00
1913	do		173,509	60,727		35.00
1914	do		51,851	18,148		35.00

MANUFACTURED: NETS AND NETTING.

1914	35 per cent		$51,747	$18,111		35.00
1915	do		103,948	36,381		35.00
1916	do		223,417	78,195		35.00
1917	do		484,276	169,496		35.00
1918	do		515,791	180,526		35.00
1918 [1]	do		628,990	220,146		35.00
1919 [1]	do		2,070,500	724,675		35.00
1920 [1]	do		5,774,022	2,020,907		35.00
1921 [2]	do		3,182,486	1,130,870		35.00

ALL OTHER MANUFACTURES.

1914	35 per cent		$63,389	$22,186		35.00
1915	do		84,506	29,577		35.00
1916	do		31,196	10,918		35.00
1917	do		27,703	9,696		35.00
1918	do		27,313	9,560		35.00
1918 [1]	do		12,202	4,271		35.00
1919 [1]	do		88,196	30,868		35.00
1920 [1]	do		149,263	52,242		35.00
1921 [2]	do		91,882	32,158		35.00

[1] Calendar year.

[2] Six months ended June 30, 1921.

Rates of duty—Human hair.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	442	Hair, human, bracelets, braids, chains, rings, curls, and ringlets, composed of hair, or of which hair is the component material of chief value.	35 per cent ad valorem.
	444	Human hair, raw, uncleaned, and not drawn	20 per cent ad valorem.
		If clean or drawn, but not manufactured	30 per cent ad valorem.
		When manufactured	35 per cent ad valorem.
1890	447	Hair, human, if clean or drawn but not manufactured	20 per cent ad valorem.
	461	Manufactures of * * * human hair, * * * or of which these substances or either of them is the component material of chief value, all of the above not specially provided for in this act.	35 per cent ad valorem.
	604	* * * human hair, raw, uncleaned, and not drawn	Free.
1894	332	Hair, human, if clean or drawn but not manufactured	20 per cent ad valorem.
	353	Manufactures of * * * human hair, * * * or of which these substances or either of them is the component material of chief value, all of the above not specially provided for in this act.	30 per cent ad valorem.
	504	* * * human hair, raw, uncleaned, and not drawn	Free.
1897	429	Hair, human, if clean or drawn but not manufactured	20 per cent ad valorem.
	450	Manufactures of * * * human hair, * * * or of which these substances or either of them is the component material of chief value, not specially provided for in this act.	35 per cent ad valorem.
	571	* * * human hair, raw, uncleaned, and not drawn	Free.
1909	442	Hair, human, if clean or drawn but not manufactured	20 per cent ad valorem.
		Manufactures of human hair, or of which human hair is the component material of chief value, not specially provided for in this section.	35 per cent ad valorem.
	583	* * * human hair, raw, uncleaned, and not drawn	Free.
1913	351	Human hair, raw	10 per cent ad valorem.
		If cleaned or commercially known as drawn, but not manufactured.	20 per cent ad valorem.
		Manufactures of human hair, including nets and nettings, or of which human hair is the component material of chief value, not specially provided for in this section.	35 per cent ad valorem.

Court and Treasury Decisions.

Human hair tops are not specifically provided for and are assessed with duty under paragraph 385 as a nonenumerated article manufactured in whole or in part. (T. D. 36200, of 1916.) Such merchandise assessed under paragraph 385 were claimed to be dutiable under paragraph 286 and the protest was overruled by the Board of General Appraisers without affirming the assessment. (Abstract 38842, of 1915.)

Human hair yarn is dutiable at 35 per cent as a manufacture of human hair under paragraph 351; human hair press cloth made from the yarn is dutiable at 15 cents per square yard under paragraph 353. The 15-cent rate is generally considerably less than the 10 per cent on raw human hair under paragraph 351.

Separate provision might be made for human hair tops.

HAIR, CURLED, SUITABLE FOR BEDS AND MATTRESSES.

[Par. 352, act of 1913.]

SUMMARY.

Hair, curled, suitable for beds and mattresses, is produced from both domestic and imported hair. Horse, cow, goat, and hog hair is used, horsehair being the best. It is also the chief raw material imported.

In 1914 there were 19 establishments engaged in this industry. They employed 1,212 wage earners, had a combined capital of $2,930,000, and total production of $3,658,000.

Imports are negligible, being valued at $6 in 1919 and $90 in 1920. Domestic export statistics are not available.

No tariff or competitive problems seem to be presented in this industry. Horsehair, the chief article of raw material imported, is on the free list.

GENERAL INFORMATION.

1913 TARIFF PARAGRAPH.

PAR. 352. Hair, curled, suitable for beds or mattresses, 10 per cent ad valorem.

DESCRIPTION AND USES.

Curled hair is the hair of animals, chiefly that from the manes tails, and fetlocks of horses, and tails of cattle, dyed black and curled for use in stuffing mattresses, sofas, cushions, and in other upholstery work. An extensive use of curled hair is in the upholstering of automobiles. Only the shorter hairs from the tails and manes of the horse and tails of cattle are curled, the longer lengths being used for manufacturing haircloth.

MATERIALS.

Horsehair is the best and most generally used. Most of it is imported, chiefly from Argentina, China, England, Canada, Russia, and Uruguay. The domestic hair used is procured from the packing houses and tanneries. After the raw hair is cleansed and sterilized by boiling, it is dyed. The curl is then imparted by tightly plaiting and baking the hair.

PRODUCTION.

In 1909 the value of domestic production was $5,130,000. In 1914, it was $3,658,000. This decline was due to decreased use and not increased imports. The value of production for later years is not available, but 20,719,741 pounds were produced in 1916, 22,033,651 pounds 1917, and 13,652,610 pounds in 1918.[1]

Statistics on foreign production are not available, but no serious competition is offered to the domestic industry, imports for the past seven years having averaged less than $50.

DOMESTIC EXPORTS.

Exports of curled hair are not separately stated in the statistics. They are included in manufactures of animal hair, which average between $300,000 and $400,000.

[1] Report Bureau of Markets, Department of Agriculture, Dec. 2, 1918.

ORGANIZATION.

In 1914 there were in the United States 19 establishments engaged primarily in the manufacture of curled hair. They employed 1,212 wage earners and had a combined capital of $2,930,000. Chicago, Philadelphia, and New York are the important centers of the industry.

SUBSTITUTES.

While curled hair is the best material for its various uses, it is also the most expensive. Substitutes are being used in mattress and upholstery work, those most frequently used being seaweed and sea moss, Spanish moss, Tampico, and coconut fiber.

TARIFF CONSIDERATIONS.

No tariff or competitive problems seem to arise in connection with this industry. Horsehair is the principal item of raw material imported, and this is admitted free under paragraph 503.

Production in United States—Curled hair.[1]

Year.	Number of establishments.	Wage earners.	Capital.	Wages.	Cost of materials.	Value of products.
1914	19	1,212	$2,930,000	$524,000	$2,471,000	$3,658,000
1909	29	1,372	3,929,000	570,000	3,498,000	5,130,000

[1] Abstract of the census of manufacturers, 1914.

Imports for consumption—Revenue.

HAIR, CURLED, SUITABLE FOR BEDS AND MATTRESSES.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1908	10 per cent		$136	$13.00		10.00
1909	do		10	1.00		10.00
1910	do		8	.80		10.00
1911	do		47	4.70		10.00
1912	do		259	25.90		10.00
1913	do		1,726	172.00		10.00
1914	do		2	.20		10.00
1915	do		271	27.00		10.00
1916	do					
1917	do		72	7.20		10.00
1918	do		1	.10		10.00
1918[1]	do					
1919[1]	do		6	.60		10.00
1920[1]	do		140	14.00		10.00
1921[2]	do		18,137	1,813.00		

[1] Calendar year. [2] 6 months ended June 30, 1920.

Rates of duty—Hair, curled, suitable for beds or mattresses.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	443	Curled hair, except of hogs, used for beds or mattresses	25 per cent ad valorem.
	717	Hair, * * * of hogs, curled for beds and mattresses, and not fit for bristles.	Free.
1890	450	Hair, curled, suitable for beds or mattresses	15 per cent ad valorem.
1894	332½	do	10 per cent ad valorem.
1897	430	do	Do.
1909	444	do	Do.
1913	352	do	Do.

HAIRCLOTH.

[Known as "crinoline," "hair seating," and hair press cloth.]

SUMMARY.

Haircloth known as "crinoline" and "hair seating" are made from the long hair of the manes and tails of horses. Crinoline is a light haircloth, formerly much used in feminine apparel, but is now confined principally to the stiffening of hats and bonnets and in stiffening men's coats. Hair seating is a heavy cloth used in upholstery, much less now than formerly.

Imports of crinoline are negligible. Those of hair seating are not stated separately from hair press cloth. The industry is relatively unimportant, the total production of all haircloth for 1914 being $2,395,486. No tariff or competitive questions are involved.

Hair press cloth is a very heavy cloth made from spun hair, chiefly human hair from the Orient. To a small extent horsehair from South America is used for some makes of this cloth. It is used in connection with the expression of cottonseed, linseed, and other oils, and is important as an auxiliary to the oil-milling industry. The manufacture of this type of press cloth developed during the war, it having come into general use as a substitute for camel's-hair press cloth, which was formerly almost exclusively used, but which could not be supplied in sufficient quantities owing to the curtailment of the supply of raw material.

Official production figures are not available, but it is estimated from information furnished by the trade that the annual production is about 2,000,000 pounds, with a value of $1,800,000. Imports are combined with hair seating and in 1919 were valued at $164,560. Practically all of these, however, were press cloth.

The industry faces strong foreign competition. American manufacturers request a revision upward of the duty on the hair press cloth. They state that the present duty of 15 cents per square yard is only about one-fourth, as regards the hair content, of the duty they pay on the raw human hair.

Summary table.[1]

CRINOLINE.

	Value (imports for consumption).	Amount of duty.	Value per unit of quantity (square yard).	Equivalent ad valorem rate.
Fiscal year:				*Per cent.*
1910	$171	$20	$0.665	12.02
1911	4,223	830	.407	19.66
1912	1,814	339	.427	18.73
1913	58	9	.468	6.48
1914	46	3	.754	7.96
1915	336	56	.356	16.80
1916	17	2	.485	12.35
1917	177	15	.692	8.61
Calendar year:				
1918	11,787	148	4.78	1.25
1919				
1920	150	4	2.02	2.96

[1] Total production of haircloth in the United States in 1914 amounted to $2,395,486.

Summary table—Continued.

HAIR SEATING AND HAIR PRESS CLOTH.

	Value (imports for consumption).	Amount of duty.	Value per unit of quantity (square yard).	Equivalent ad valorem rate.
Fiscal year:				*Per cent.*
1910	$23,581	$3,286	$1.42	13.93
1911	23,533	4,071	1.15	17.30
1912	18,249	2,600	1.40	14.25
1913	31,869	4,126	1.54	12.99
1914	106,757	8,876	1.94	8.31
1915	81,723	5,840	2.97	7.15
1916	67,633	4,375	2.31	6.47
1917	84,399	4,079	3.10	4.83
1918	122,598	4,684	3.92	3.82
Calendar year:				
1918	95,751	3,207	4.47	3.34
1919	164,560	5,083	4.85	3.05
1920	48,775	1,774	4.12	3.64

General Information.

1913 TARIFF PARAGRAPH.

Par. 353. Haircloth, known as crinoline cloth, 6 cents per square yard; haircloth, known as hair seating, and hair press cloth, 15 cents per square yard.

CRINOLINE AND HAIR SEATING.

Description and uses.—Haircloth is made from the long hair obtained from the mane and tail of horses. It is a very strong, durable material, not liable to fade, but on account of its open texture catches a great deal of dust. Crinoline cloth is the light haircloth formerly much used for stiffening feminine apparel, but now principally used in stiffening bonnets and hats and men's coats. Hair seating is heavy haircloth used in upholstery.

Raw materials.—The chief raw material used is horsehair. Other hair is used to a small extent. Imports of horsehair come chiefly from Argentina, Brazil, Uruguay, Canada, Russia, England, Italy, Germany, and Belgium. The domestic horsehair is obtained from tanneries, from dead animals, and is inferior to the imported horsehair.

Processes.—The raw hair is boiled to clean and sterilize it, then is dried by high-speed centrifugal action, then drawn or heckled, sorted into proper lengths. It is then soaked in water to make it supple, and dyed black, when it is ready for use. Formerly it was woven on hand looms (now by machinery), with a black linen warp, the hair being the weft. The weave is a kind of sateen, the weft or hair being flushed to the surface. It is woven with a raw edge on each side, no selvage being possible on account of the short length of the horse hair. After leaving the loom the cloth is hot rolled to give it a luster.

Haircloth is made in widths of from 16 to 30 inches.

Substitutes.—The most commonly used imitation or substitute is that made from black polished linen warp and weft.

Imports.—Imports of crinoline are negligible; those of hair seating are shown under press cloth below, together with statistics of domestic production.

HAIR PRESS CLOTH.

Description and uses.—Press cloth is entirely distinct from crinoline and hair seating, being a very heavy thick cloth used in the oil milling industry as a container in which the seed meats are wrapped while being subjected to heavy pressure to express the oils. At the present time two different styles of press cloth are used—camel's-hair press cloth (covered by pars. 288 and 422) and hair press cloth, included in the paragraph under consideration.

Under the latter paragraph is included all press cloths made of human or animal hair not specifically mentioned elsewhere. Practically all hair press cloth used is that made of human hair. A haircloth made of horsehair is used as a protective mat for some purposes in the oil mills, but its use is small and relatively unimportant, not being used for the general purposes of press cloth.

Human-hair press cloth is made from the heavy, coarse human hair from the Orient. The principal requirement for this cloth is strength and resistance to heat, as the seed meats are pressed immediately after cooking while extremely hot. Spun hair is used in weaving the cloth. It weighs 44 to 66 ounces to a yard 12 to 13½ inches wide, or 7 to 11 pounds to the square yard, the different weights being used for different conditions. In view of the weight of the cloth, it is sold by the pound rather than by the yard.

Development of industry.—The manufacture in the United States of press cloth from human hair is a recently developed industry, its origin and growth having been due to war conditions. Prior to the war practically all the press cloth used was made from camel's hair, but with the supply of raw material curtailed, camel's-hair cloth could not be made in sufficient quantities to meet the demands. A substitute was found in the Oriental human hair. It is not equal to the camel's-hair cloth in wearing qualities, but met the demands as a substitute and can now compete with the camel's-hair cloth on a lower price basis.

While the spinning of human hair for this purpose is new here, it had been established in European countries. The process of spinning human hair for press cloth is different from that for making the camel's-hair cloth.

The press cloth industry is important as auxiliary to oil milling, press cloth being required in the making of cottonseed, linseed, castor, and other oils.

ORGANIZATION AND DOMESTIC PRODUCTION.

In 1914 the census of manufactures showed domestic production of all hair cloth as $2,395,486, 15 out of a total of 19 establishments being located in Pennsylvania, the others in New York and Rhode Island. The production of hair press cloth developed since 1914.

According to estimates of the trade, the annual production of hair press cloth is between 1,700,000 pounds to 2,000,000 pounds, with a value of $1,600,000 to $1,800,000. The mills are located in South Carolina, Georgia, Louisiana, Texas, Massachusetts, New York, and

Pennsylvania. The capitalization is not known, but heavy investments were made during the war to speed up production. Some of these mills confine their production to human hair press cloth, while some manufacture both types of cloth. It was necessary, however, for all to install special spindles for spinning the hair, the process being different from that employed in making camel's hair cloth.

There are no exports of press cloth, the entire domestic production being consumed at home.

FOREIGN PRODUCTION AND IMPORTS.

Statistics on foreign production are not available, nor are import figures shown separately. Imports of hair seating and hair press cloth are combined, the total for 1919 being $164,560. In 1913 the imports were only $31,000, but in 1914 they jumped to $106,000, the larger part coming in after the 1913 tariff act became effective. There was a decline the following year, but the total increased to $122,000 in 1918 and $164,000 in 1919. The 1920 total, however, is smaller than any year since 1914. It is claimed by the manufacturers that practically all of these imports were hair press cloth. The increased imports were incidental to the increased demands for press cloth.

TARIFF HISTORY.

Under the act of 1883 crinoline cloth was dutiable at 30 per cent ad valorem and hair seating at 30 cents per square yard; under the act of 1890 the duties were, respectively, 8 cents and 30 cents per square yard, which the act of 1894 reduced to 6 cents and 20 cents per square yard. Hair press cloth was first specifically included in the act of 1897, that act making hair seating and hair press cloth dutiable at 20 cents per square yard and crinoline cloth at 10 cents per square yard. The act of 1909 retained the duty of 20 cents per square yard on hair seating and hair press cloth, but reduced that on crinoline to 8 cents per square yard.

Prior to the act of 1913 camel's-hair press cloth was not specifically mentioned in the tariff, it being dutiable under Schedule K. Under the act of 1913 hair of the camel was placed on the free list (par. 650); press cloth of camel hair is dutiable at 10 per cent ad valorem (par. 288); and camel's-hair press cloth imported expressly for oil-milling purposes and so marked, and meeting the requirements specified is admitted free (par. 422).

COMPETITIVE CONDITIONS.

Human-hair press cloth faces domestic competition from camel's hair press cloth. They are related industries, however, some plants being equipped to manufacture both kinds of cloth.

During the period between the adoption of the 1913 tariff act and the beginning of the war the imports from England and Germany of both kinds of press cloth were heavy, and indicated that those countries could make the cloth for less than the domestic manufacturers. This competition was not serious during the war, the making of camel's-hair press cloth in those countries having ceased entirely, but the imports of both cloths showed a considerable increase in 1919. The source of raw material for camel's-hair cloth is more

accessible to the European manufacturers, and, as Russian human hair is entirely similar to Chinese hair, the raw material for the human-hair press cloth would also probably be cheaper.

TARIFF CONSIDERATIONS.

Camel's-hair press cloth and the hair from which it is made are both on the free list. The present duty on hair press cloth (par. 353) of 15 cents per square yard is equivalent to 1½ cents to 2½ cents per pound on the hair content of the cloth, a square yard weighing from 6 to 11 pounds. Compared to this, the average duty per pound paid on raw Asiatic hair for the first half of 1920 was $5\frac{3}{10}$ cents per pound. The manufacturers state that the loss due to cleaning, sorting, and otherwise preparing the raw hair is about 20 per cent, which makes the total duty paid on the hair content of the domestic cloth three to four times as much as that paid on the hair content of the foreign-made cloth.

The customs revenue from hair seating and hair press cloth has averaged about $5,000 annually since 1914, while that from the raw uncleaned hair (the greater part of which is used in hair press cloth) averaged $50,000 between 1914 and 1919. In 1919 it was $136,000 and in 1920 it was $153,350.

The present act combines hair seating and hair press cloth. The hair press cloth now imported is entirely dissimilar and distinct from hair seating, is of varying weights, and is sold by the pound instead of by the yard. It would seem desirable to separate it from hair seating and make the unit of duty the same as the commercial unit; that is, the pound.

No tariff questions arise in connection with crinoline and hair seating.

Production of haircloth[1] *in United States.*

Year and State.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.
United States:						
1914	19	595	$2,945,000	$290,000	$1,654,000	$2,395,000
1909	14	538	2,281,000	252,000	1,614,000	2,230,000
States, 1914:						
Pennsylvania	15	466	2,057,000	233,000	1,324,000	1,938,000
All other States	4	129	888,000	57,000	330,000	457,000

[1] Haircloth was formerly used most extensively in upholstering, and its manufacture was included under "upholstering materials." Large quantities of it are now used in the manufacture of clothing, and for this reason it was given a separate classification in 1909. This textile is made by using a warp of cotton yarn and a weft of horsehair. Hair bristles, brush material, and curled hair were also reported, but the value of these has been included in the amounts reported as subsidiary products to the upholstering materials industry.

Imports for consumption—Revenue.

HAIRCLOTH KNOWN AS CRINOLINE.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year—		*Square yards.*				*Per cent.*
1908	10 cents per square yard.	32	$20	$3	$0.625	16.00
1909	do	1,178	299	117	.254	39.40
1910	8 cents per square yard.	257	171	20	.665	12.02
1911	do	10,380	4,223	830	.407	19.66
1912	do	4,247	1,814	339	.427	18.73
1913	do	124	58	9	.468	6.48
1914	6 cents per square yard.	61	46	3	.754	7.96
1915	do	941	336	56	.356	16.80
1916	do	35	17	2	.485	12.35
1917	do	254	177	15	.692	8.61
1918	do					
Calendar year—						
1918	do	2,465	11,787	148	4.78	1.25
1919	do					
1920	do	74	150	4	2.027	2.96

HAIRCLOTH KNOWN AS HAIR SEATING AND HAIR PRESS CLOTH.

Fiscal year:						
1908	20 cents per square yard.	18,912	$22,863	$3,782	$1.21	16.54
1909	do	21,210	24,940	4,242	1.18	17.01
1910	do	16,432	23,581	3,286	1.42	13.93
1911	do	20,357	23,533	4,071	1.15	17.30
1912	do	13,004	18,249	2,600	1.40	14.25
1913	do	20,630	31,869	4,126	1.54	12.99
1914	do	12,778	23,435	2,555	1.83	10.91
1914	15 cents per square yard.	42,143	83,322	6,321	1.98	7.59
1915	do	38,934	81,723	5,840	2.97	7.15
1916	do	29,173	67.633	4,375	2.31	6.47
1917	do	27,196	84,399	4,079	3.10	4.83
1918	do	31,230	122,598	4,684	3.92	3.82
Calendar year:						
1918	do	21,379	95,751	3,207	4.478	3.34
1919	do	33,885	164,560	5,083	4.856	3.08
1920	do	11,831	48,775	1,774	4.122	3.64
1921 [1]	do	1,800	6,595	270		

[1] Six months ended June 30, 1921.

Rates of duty—Haircloth, known as "crinoline cloth," "hair seating," and "hair press cloth."

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	445	Haircloth, known as "crinoline cloth," and all other manufactures of hair not specially enumerated or provided for in this act.	30 per cent ad valorem.
	446	Haircloth, known as "hair seating"	30 cents per square yard.
1890	448	Haircloth, known as "crinoline cloth"	8 cents per square yard.
	449	Haircloth, known as "hair seating"	30 cents per square yard.
1894	333	Haircloth, known as "crinoline cloth"	6 cents per square yard.
	334	Haircloth, known as "hair seating"	20 cents per square yard.
1897	431	Haircloth, known as "crinoline" cloth	10 cents per square yard.
		Haircloth, known as "hair seating," and hair press cloth	20 cents per square yard.
1909	445	Haircloth, known as "crinoline" cloth	8 cents per square yard.
		Haircloth, known as "hair seating," and hair press cloth	20 cents per square yard.
1913	353	Haircloth, known as "crinoline" cloth	6 cents per square yard.
		Haircloth, known as "hair seating," and hair press cloth	15 cents per square yard.
	288	* * * press cloth composed of camel's hair, n. s. p. f.	10 per cent ad valorem
	422	* * * press cloths composed of camel's hair, imported expressly for oil milling purposes, and marked so as to indicate that it is for such purposes, and cut into lengths not to exceed 72 inches and woven in widths not under 10 inches nor to exceed 15 inches and weighing not less than ½ pound per square foot.	Free.

COURT AND TREASURY DECISIONS.

Press cloths composed of camel's hair for oil milling purposes are exempt from duty, while the yarn from which they are made is dutiable at 18 per cent ad valorem under paragraph 287.

The provision in paragraph 431 of the act of 1897 for hair press cloth was held not limited to fabrics composed of the same material (horsehair) as the other articles enumerated in said paragraph. (Caldwell *v.* United States, 141 Fed. 487.) But a different conclusion was reached in another case where camel's-hair press cloth was held dutiable as manufactures of wool rather than as hair press cloth under that act. (Oberle *v.* United States, 165 Fed. 53.)

Hair press cloth, in chief value of camel's hair, was held dutiable as press cloth composed of camel's hair under paragraph 288. (Abstract 38425, of 1915.) Camel's-hair press-cloth mats are dutiable as manufactures of wool under paragraph 288; and combination goat's-hair and camel's-hair mats as a nonenumerated manufactured article under paragraph 385 when goat hair is the element of chief value. (T. D. 34285, of 1914.)

Cattle-hair cloths, square in form, with flaps to fold over similar to envelopes, used for pressing herbs for medicinal purposes, classified as a manufacture of wool under paragraph 288 and claimed dutiable as hair press cloth or as a nonenumerated manufactured article, were found not to be hair press cloth or an article made from hair press cloth. (Abstract 40330, of 1916.)

Regulations governing the marking of press cloths are prescribed in T. D. 33929, of 1913.

HAIR OF HORSE, CATTLE, AND OTHER ANIMALS. N. S. P. F.

Summary table.

	Imports for consumption.[1]	Value (imports for consumption).[2]	Value per unit of quantity.	Domestic exports.
Fiscal year:	*Pounds.*			
1910	18,555,723	$3,138,729	$0.169	$1,142,845
1911	17,493,499	2,632,798	.15	1,274,345
1912	16,499,594	3,385,180	.205	1,426,111
1913	16,472,118	3,308,711	.208	1,449,157
1914	19,282,972	2,720,358	.141	1,085,038
1915	11,573,258	2,244,831	.193	1,402,189
1916	15,810,400	3,052,339	.193	2,038,838
1917	13,156,182	3,061,779	.232	1,451,354
1918	9,966,644	1,728,959	.173	1,478,498
Calendar year:				
1918	6,365,360	1,315,440	.206	1,055,751
1919	8,540,197	2,162,382	.253	2,247,238
1920 [3]	11,663,615	3,402,702	.291	2,423,258

[1] Does not include horsehair for bows of violins after 1913, as quantity not stated.
[2] First six months of 1920.

General Information.

1913 TARIFF PARAGRAPH.

Par. 503. "Hair of horse, cattle, and other animals, cleaned or uncleaned, drawn or undrawn, but unmanufactured, not specially provided for in this section," free.

DESCRIPTION AND USES.

The long hair from the manes and tails of horses is used as a filling, usually with a cotton warp, in making haircloth, fish lines, straining cloths, and in violin bows. The short hair from horses' manes and tails and from the tails of cattle is curled and used for stuffing cushions and for other upholstery work. The hair of cattle and other animals is a tannery by-product and is used in felt for roofing and for covering steam pipes. It is used, mixed with wool waste or cotton, in making coarse yarns for carpets, horse blankets, and the cheapest grade of tweeds. Cattle hair is also used as binding for mortar and plaster.

PRODUCTION.

Domestic production statistics are not available. Most of the cattle hair used is produced at home, while a large part of the horsehair is imported.

IMPORTS.

The average annual importation of horsehair has been somewhat less than 4,000,000 pounds a year for the last few years, although the imports exceeded 6,000,000 pounds in each of the years 1916 and 1917. In 1918 imports of horsehair were 3,978,240 pounds, valued at $1,316,643. In 1918, two-thirds of our imports of horsehair came from Argentina; China was the source of next importance, while

Italy, England, Canada, Mexico, and Uruguay also sent us considerable amounts. The imports of cattle and other animal hair, with the exception of horsehair, decreased considerably during the war. In 1914 they amounted to 10,507,680 pounds, valued at $1,051,698, while in 1918, they amounted to 4,029,839 pounds, valued at $550,306. Canada is the principal source of these imports. A large quantity came from Germany before the war.

EXPORTS.

Exports of unmanufactured animal hair amount to something over $1,000,000 a year on the average, most of which goes to Great Britain. Exports of manufactures of animal hair amount on the average between $300,000 and $400,000, principally to Canada.

Imports, by countries—Hair of horse, cattle, and other animals, n. s. p. f.

FISCAL YEARS.

Imported from—	1910		1911		1912	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Argentina	1,628,753	$374,675	1,338,674	$315,656	1,807,088	$512,163
United Kingdom	2,156,281	883,026	2,092,999	615,351	2,641,049	947,482
Canada	3,808,196	197,463	3,225,152	150,227	2,632,159	186,514
Uruguay	601,399	123,020	434,134	103,560	382,982	93,274
Mexico	352,446	71,831	357,355	71,247	451,249	92,432
China	116,732	62,797	75,737	50,715	320,610	79,620
Germany	6,352,109	581,575	7,154,678	671,793	5,333,791	683,611
France	416,882	69,049	241,782	32,446	296,475	37,144
Italy	418,788	190,071	376,109	207,825	378,950	233,318
Russia in Europe	1,107,029	306,634	799,673	175,192	1,235,084	312,752
Brazil	707,756	167,646	647,845	149,300	430,558	106,238
Australia	27,857	2,097	3,720	237	3,888	247
British India			80	8		
Austria-Hungary	139,759	10,542	420,931	19,323	85,896	15,771
Denmark	32,484	6,695	44	42	10	5
Belgium	315,467	49,360	292,859	60,953	127,778	27,121
All other	518,744	65,310	73,496	16,700	49,416	8,047
Total	18,760,682	3,171,791	17,535,268	2,640,595	16,176,983	3,333,740

Imported from—	1913		1914		1915	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Argentina	1,636,424	$465,308	1,151,722	$327,126	1,349,271	$394,107
United Kingdom	2,691,414	919,987	2,780,258	884,664	2,323,997	787,795
Canada	3,668,302	206,309	3,482,368	234,275	5,224,336	342,903
Uruguay	225,019	61,062	202,693	50,206	338,558	79,712
Mexico	378,105	75,692	340,802	63,734	353,477	79,515
China	417,897	163,422	153,368	121,011	364,049	111,809
Germany	4,741,084	669,294	4,321,521	595,548	751,696	197,388
France	121,703	24,475	185,536	27,398	63,880	5,690
Italy	311,741	225,918	263,155	119,263	344,579	163,905
Russia in Europe	1,017,840	246,210	617,909	152,388	5,338	2,018
Brazil	444,938	130,710	211,877	55,202	169,240	38,006
Australia			1,922	129	138,213	8,701
Chile	1,216	341			12,945	2,988
British India	16,691	10,441	30,352	1,074	48,266	2,187
Austria-Hungary	140,870	20,429	54,111	7,572		
Denmark	324,507	36,388	56,090	5,267	15,433	2,261
Belgium	212,595	46,311	194,257	42,300	39,042	1,554
All other	146,174	20,777	198,575	27,991	148,153	24,413
Total	16,496,520	3,323,074	14,246,516	2,715,146	11,690,473	2,244,853

Imports, by countries—Hair of horse, cattle, and other animals, n. s. p. f.—Continued.

FISCAL YEARS—Continued.

Imported from—	1916		1917		1918	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Argentina	3,765,327	$926,739	3,972,062	$1,021,530	3,007,401	$763,520
United Kingdom	2,647,072	835,382	1,298,638	509,884	426,450	199,968
Canada	5,256,496	397,244	3,907,205	293,618	3,152,620	227,782
Uruguay	993,065	213,069	475,875	110,967	144,836	35,941
Mexico	522,526	91,000	237,379	51,364	154,685	34,816
China	1,239,656	267,831	1,651,204	605,267	614,655	332,678
Germany	2,837	18,314	734	715		
France	15,980	6,797	205,305	53,452	5,174	7,235
Italy	128,735	71,128	226,463	30,738	103,013	65,464
Russia in Europe	198,045	70,758	24,025	15,049		
Brazil	336,457	72,478	143,026	30,331	4,318	2,008
Russia in Asia	3,625	2,171	164,954	67,739	83,440	45,640
Australia	363,893	19,649	167,265	37,400	63,075	35,819
Chile	168,005	16,332	407,590	71,069	59,612	5,657
British India	165,192	14,499	89,519	18,189	2,726	1,142
Austria-Hungary						
Denmark	61,393	10,290	4,158	3,419		
Belgium						
All other	82,621	26,090	233,385	122,143	161,943	76,810
Total	15,890,975	3,059,771	13,108,787	3,042,874	7,983,948	1,834,480

CALENDAR YEARS.

Imported from—	1918		1919		1920	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Argentina	1,495,639	$382,613	1,889,191	$563,254		
United Kingdom	188,341	47,529	556,795	418,187		
Canada	3,292,564	241,823	4,313,016	353,739		
Uruguay	205,242	46,615	382,276	105,517		
Mexico	135,042	27,603	137,271	32,016		
China	764,796	371,328	626,964	369,806		
Germany	15	46	3,738	36,310		
France	984	1,230	19,199	8,875		
Italy	53,404	37,797	76,647	62,266		
Brazil	1,753	836	127,648	30,929		
Russia in Asia	82,000	45,000	91,041	22,406		
Australia	58,671	40,119	51,323	38,203		
Chile	9,928	999	81,228	12,284		
British India	1,500	800	1,250	222		
Denmark			384	11,230		
Belgium						
All other	65,308	70,218	201,913	120,567		
Total	6,355,187	1,314,556	8,559,884	2,185,611	11,666,800	$3,420,317

Imports for consumption—Revenue—Hair, unmanufactured, cleaned or uncleaned, drawn or undrawn.

CATTLE HAIR.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year—		*Pounds.*				*Per cent.*
1908	Free	8,647,000	$719,110		$0.083	
1909	do	9,129,198	772,790		.085	
1910	do	13,075,572	1,015,119		.078	
1916	do	5,949,416	588,201		.097	
1917	do	3,951,145	414,607		.149	
1918	do	2,814,861	230,370		.081	
Calendar year—						
1918	do	2,530,468	162,664		.064	
1919	do	3,244,675	322,949		.099	
1920	do	4,581,038	646,553		.119	
1921[1]	do	969,560	72,388			

HORSEHAIR FOR BOWS OF VIOLINS AND OTHER MUSICAL INSTRUMENTS.

Fiscal year—						
1913	Free		$6,267			
1914	do		8,279			
1915	do		6,511			
1916	do		13,473			
1917	do		2,381			
1918	do		8,690			
Calendar year—						
1918	do		74			
1919	do		24,829			
1920	do		17,661			
1921[1]	do		1,794			

ALL OTHER HORSEHAIR.

Fiscal year—						
1908	Free	4,259,540	$1,331,594		$0.313	
1909	do	4,336,650	1,936,581		.447	
1910	do	5,480,150	2,123,610		.387	
1911	do	4,544,467	1,685,246		.371	
1912	do	5,349,898	2,307,328		.431	
1913	do	5,144,637	2,229,732		.433	
1914	do	3,776,227	1,668,484		.442	
1915	do	3,543,358	1,501,085		.423	
1916	do	6,077,695	2,052,545		.337	
1917	do	6,432,770	2,255,917		.350	
1918	do	3,978,240	1,316,643		.330	
Calendar year—						
1918	do	2,900,913	1,010,172		.348	
1919	do	3,993,405	1,618,683		.405	
1920	do	4,893,247	2,184,603		.446	
1921[1]	do	1,363,620	589,992			

OTHER ANIMAL HAIR, N. S. P. F.

Fiscal year—						
1911	Free	12,949,032	$947,552		$0.073	
1912	do	11,149,696	1,077,852		.097	
1913	do	11,327,481	1,078,979		.095	
1914	do	15,506,745	1,051,874		.100	
1915	do	8,029,900	743,746		.092	
1916	do	3,783,289	416,593		.110	
1917	do	2,772,257	391,255		.141	
1918	do	1,173,543	181,946		.155	
Calendar year—						
1918	do	933,979	141,604		.152	
1919	do	1,302,116	220,750		.169	
1920	do	2,189,330	571,546		.261	
1921[1]	do	162,537	740,796			

[1] Six months ending June 30, 1921.

Domestic exports—Hair of horse, cattle, and other animals, n. s. p. f.

FISCAL YEARS.

Exported to—	1910 [1]	1911 [1]	1912 [1]	1913	1914	1915	1916	1917	1918
United Kingdom	$435,468	$639,066	$613,924	$620,015	$415,313	$1,094,978	$1,776,660	$1,287,628	$961,936
Germany	268,628	231,206	288,811	420,526	296,382	28,661	.....	.....	.....
Belgium	103,036	92,803	129,041	238,074	168,905	9,646	.....	.....	.....
Canada	191,235	197,283	274,483	117,694	115,561	96,346	151,170	100,981	199,424
Australia	34,291	8,927	23,853	12,640	22,177	8,002	2,201	.....	4,071
Austria-Hungary	12,632	15,253	18,376	1,550	250	1,500	.....	.....	.....
France	18,121	32,604	21,765	27,367	17,925	26,086	73,382	47,616	26,887
Netherlands	30,105	19,462	22,514	6,838	18,456	25,673	2,217	.....	.....
Mexico	1,698	5,376	2,855	285	42	1,456	78	159	10,199
Panama	3,286	2,792	6,301	338	191	6	39	9	18,231
Cuba	18,778	16,242	13,221	5,543	5,738	43,312	10,558	5,313	22,917
Japan	60	1,698	1,366	1,100	.....	.....	.....	560	13,593
British South Africa	80	355	170	3,354	.....	.....	925	1,658	15,199
Sweden	.....	.....	.....	9,608	.....	6,502	.....	.....	.....
All other	25,427	11,278	9,431	2,225	23,598	60,021	21,608	7,430	226,041
Total	1,142,845	1,274,345	1,426,111	1,449,157	1,085,038	1,402,189	2,038,838	1,451,354	1,478,498

CALENDAR YEARS.

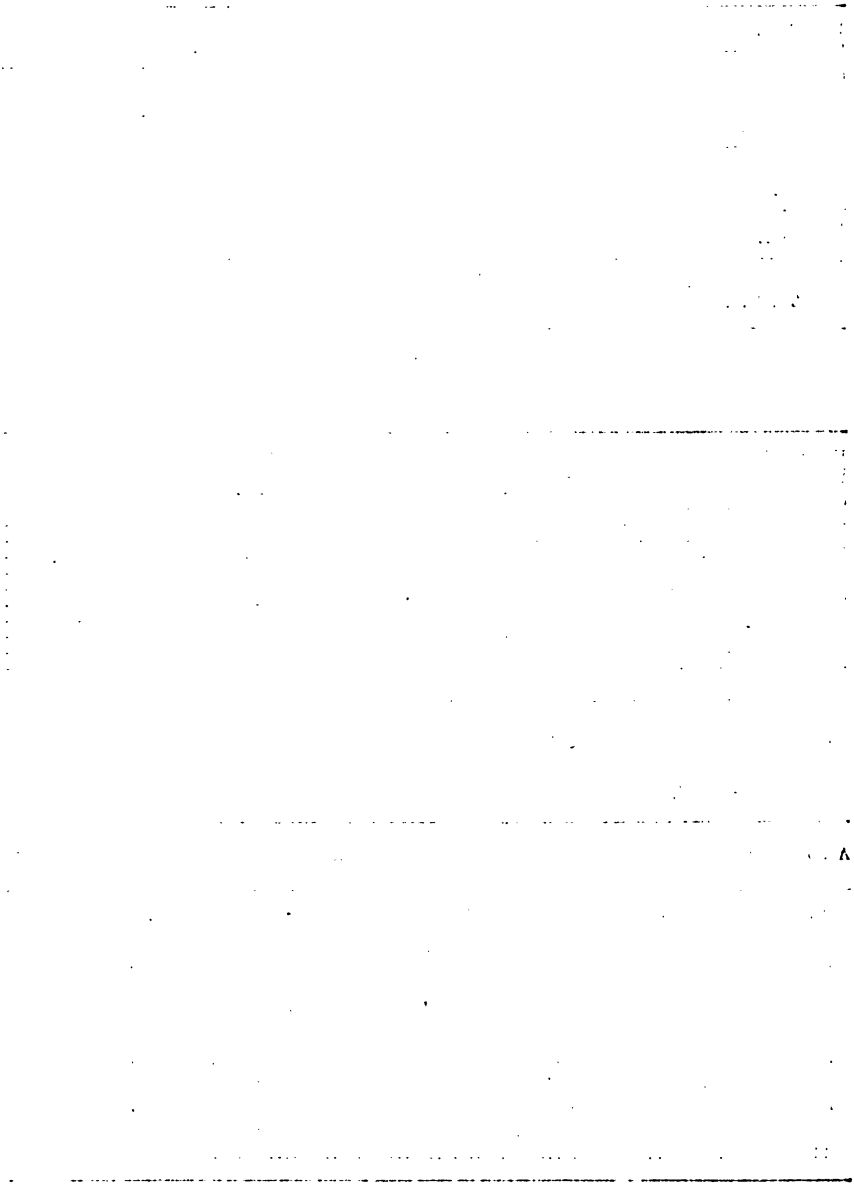
Exported to—	1918	1919	1920
United Kingdom	$569,988	$1,087,806	.....
Germany	.....	30,931	.....
Belgium	.....	23,302	.....
Canada	266,980	318,568	.....
Australia	9,152	13,487	.....
France	16,507	100,599	.....
Netherlands	.....	20,892	.....
Mexico	562	30,005	.....
Panama	10,012	7,573	.....
Cuba	29,594	35,840	.....
Japan	16,235	67,225	.....
British South Africa	5,027	605	.....
Sweden	.....	5,959	.....
All other	131,694	504,446	.....
Total	1,055,751	2,247,238	$2,423,258

[1] Includes both "Unmanufactured" and "Manufactures of."

Rates of duty—Hair of horses, cattle, and other animals, n. s. p. f.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	Sundries.	Hair, horse or cattle, and hair of all kinds, cleaned or uncleaned, drawn or undrawn, but unmanufactured, not specially enumerated or provided for in this act.	Free.
1890	604	Hair of horse, cattle, and other animals, cleaned or uncleaned, drawn or undrawn, but unmanufactured, not specially provided for in this act; * * * .	Do.
1894	504	Hair of horses, cattle, and other animals, cleaned or uncleaned, drawn or undrawn, not specially provided for in this act; * * * .	Do.
1897	571	Hair of horse, cattle, and other animals, cleaned or uncleaned, drawn or undrawn, but unmanufactured, not specially provided for in this act; * * * .	Do.
1909	583	Hair of horse, cattle, and other animals, cleaned or uncleaned, drawn or undrawn, but unmanufactured, not specially provided for in this section; * * * .	Do.
1913	503	.....do.....	Do.

○



UNITED STATES TARIFF COMMISSION

WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPHS 349 AND 350 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

Paragraph 349:
Fans

Paragraph 350:
Gun Wads

Paragraph 355:
Indurated Fiber Ware
Manufactures of Pulp, n. s. p. f.

Paragraph 480:
Palm Leaf Fans

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this, industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act, reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and Index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and Index" the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Charles F. Yauch, of the Commission's staff, and of others.

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FANS.

General Information.

1913 TARIFF PARAGRAPHS.

349. Fans of all kinds, except common palm-leaf fans, 50 per cent ad valorem.

480. Fans, common palm-leaf, plain and not ornamented or decorated in any manner, * * * free.

DESCRIPTION.

Fans are made in a variety of forms but in general are of two kinds: (*a*) Those which can be folded; and (*b*) those which are permanently expanded or fixed. Folding fans are sometimes made of thin slips of ivory, wood, papier-mâché, etc. They are, however, more commonly made of a continuous surface of paper, silk, or other material mounted on strips and can be folded easily in the manner of a plaiting. Folding fans had their origin in Japan. Fixed fans are made of feathers set side by side, leaves of palm trees, and paper or other material spread over a rigid frame.

DOMESTIC PRODUCTION.

Statistics of production in the United States are not available. Data relating to this industry are included with "Fancy articles not elsewhere specified" in the census classification of manufactures.

Materials.—The chief materials used in the manufacture of fan sticks are bamboo, wood, bone, mother-of-pearl, celluloid, galalith, tortoise shell, horn, and ivory. The mountings are made of paper, parchment, cotton, silk, leather, and feathers of the ostrich, goose, and other domestic birds. The mountings are sometimes decorated with lace, paintings, or spangles, or combinations of these.

The domestic manufacturers depend almost entirely on the importation of fan sticks, fabrics, laces, feathers, and spangles used in their industry. This is due partly to the scarcity of skilled stick makers, spanglers, and decorators, and partly to the cost of manufacture, which, according to fan manufacturers, is commercially prohibitive in this country. Such materials are imported from Japan, France, Austria, and Germany.

Domestic production, consumption, and exports.—No data are available. As previously stated, the Census Bureau does not report data separately for this industry, nor does the Bureau of Foreign and Domestic Commerce report separately the value of fans exported.

FOREIGN PRODUCTION.

The principal foreign countries producing fans are Japan, China, France, Austria, Germany, and Spain. With the exception of Japan, no data showing value of production are available.

JAPAN.

The industry in Japan is centered at Kyoto and Nagoya. Fans are made by hand and usually in private houses. There are two kinds of Japanese fans, the folding and flat. Folding fans have handles made of bamboo, wood, or bone, and are mounted with paper, parchment, cotton, or silk. Flat fans are made of wire or bamboo frames covered with silk or paper. The decorations are put on the paper or silk by hand or machine. The Statistical Report of the Department of Agriculture and Commerce, Japan, for the year 1918 shows that there were in that year 1,129 factories and workshops engaged in the manufacture of fans. The total number employed was 7,301, about evenly divided between males and females. The average number employed per factory was less than seven. The value of the product amounted to $1,614,000. A comparison of the returns for the year 1912 with those for 1918 shows the following increases: Number of factories, 16; employees, 358; and value of product, $474,000. (See p. 10.)

OTHER FOREIGN COUNTRIES.

The industry in France is centered at Paris and in Austria at Vienna. The handles or sticks of French fans are made of wood, bone, horn, mother-of-pearl, celluloid, galalith, tortoise shell, mounted with tops consisting of paper, parchment, leather, cotton, silk-tissue, lace, and feathers. Austrian, German, and Spanish fans are made on lines similar to the French. Vienna, however, has been an important center for the manufacture of feather fans, and was considered, before the war, the principal market for this class of fans.

China produces the common palm-leaf fan with natural handle and leaf; palm-leaf fans with artificial handles and with edges finished with cotton binding; fans made of strips of bamboo woven by hand; and others of a more expensive type. Fans coming under the first classification are admitted free of duty into the United States; the others are dutiable.

IMPORTS.

Fans, other than common palm leaf.—The value of fans, other than common palm leaf, imported into the United States for the five-year prewar period, 1910–1914, averaged $233,914. The average for the five-year period, 1915–1919, was $91,041. The imports for 1920 amounted to $199,950, being more than five-sixths of the prewar average. Imports before the war came from Japan, Austria, France, Germany, China, Hongkong, and Spain. Of the total imports, $320,102, in 1912, 36.5 per cent came from Japan, 26.9 per cent from Austria, 24.9 per cent from France, 5.9 per cent from Germany, and 2.7 per cent from China. In the year 1918 the percentages were: Japan, 70.7; France, 15; and China, 2.3. The increase in percentage of imports from Japan was not due to greater quantities imported

from that country but to the decrease in the total value of fans imported, there being no importations from Austria and Germany and only about one-fourth of the normal amount in value from France.

Palm-leaf fans.—The average importation of palm-leaf fans for the five-year period 1910–1914 was 763,084 dozens, valued at $61,251, or $0.08 per dozen. For the years 1915–1919, the average was 281,250 dozens, valued at $35,119, or $0.12 per dozen. In 1920 there were imported into the United States 373,668 dozens, valued at $99,828, or $0.267 per dozen.

Practically all of the palm-leaf fans imported into this country come from China. Some come from Hongkong and a few from Japan. In the year 1912, when imports amounted to 1,091,931 dozens, valued at $78,143, 84.1 per cent of the total quantity came from China, 15.6 per cent from Hongkong, and less than one-half of 1 per cent from Japan. In some of the other years, however, the imports from China both as to quantity and value have been well over 90 per cent.

TARIFF HISTORY.

Fans, other than common palm leaf.—The phrase "of whatever material composed" in the tariff act of 1883 was omitted in all subsequent tariff acts. With this exception and changes in the rate, the language has been identical. The tariff act of 1890 did not enumerate fans; 35 per cent ad valorem was imposed by the act of 1883; 40 per cent, act of 1894; and 50 per cent, acts of 1897, 1909, and 1913.

Palm-leaf fans.—Common palm-leaf fans in all tariff acts 1883–1913 have been placed in the free list. The acts of 1897, 1909, and 1913 restricted the free importation of common palm-leaf fans to "plain and not ornamented or decorated in any manner, and palm leaf in its natural state, not colored, dyed, or otherwise advanced or manufactured."

COMPETITIVE CONDITIONS.

Domestic manufacturers have been compelled to import practically all of the fabrics, laces, feathers, spangles, and fan sticks used in the production of fans, as there are no affiliated industries in this country producing such materials in sufficient quantities at reasonable prices.

The art of dressing and dyeing feathers in Europe is generally considered superior to that done in the United States. During the war, however, advancement was made in the art of dressing and dyeing feathers, which together with the availability of domestic celluloid fan sticks has enabled the domestic manufacturers to turn out a product in competition with the imported article, unless the latter is something exceptional as to dyeing and shading.

The better grades of fans are subject to change of fashion. Paris is acknowledged as the originator of designs and there has always been a strong demand in this country for French fans.

Fans of the type made in Japan and China, due largely to their decorations, can not be successfully produced here. Decorations are put on by hand in both Japan and China. The decorations on the Japanese fan reflect the work of an individual artist, while those on the Chinese fan are generally an exact copy of a design.

Imported palm-leaf fans with natural handle and leaf or with artificial handle and edges finished with cotton binding do not compete with domestic manufacture.

The export trade of domestic made fans is very limited, as the foreign producers have long had control of the market.

Fans and round fans—Production in Japan.[1]

Year.	Factories and work shops.	Males.	Females.	Total.	Value.[2]
1908	906	3,422	3,080	6,502	$918,861.79
1909	972	3,579	3,400	6,979	1,027,295.81
1910	960	3,598	3,275	6,873	1,160,835.01
1911	921	3,205	3,661	6,866	1,160,857.42
1912	1,013	3,488	3,455	6,943	1,149,461.19
1913	1,028	3,825	3,637	7,562	1,049,799.94
1914	1,043	3,779	3,441	7,220	929,043.40
1915	1,368	4,170	3,436	7,606	959,734.64
1916	1,139	3,886	3,544	7,430	1,065,943.10
1917	1,131	3,285	3,751	7,036	1,138,647.12
1918	1,129	3,607	3,694	7,301	1,613,714.22

[1] Statistical Report of the Department of Agriculture and Commerce, Japan, 1918.
[2] Yen converted to United States money at $0.498 per yen.

Imports by countries (fiscal years).

FANS OF ALL KINDS, EXCEPT COMMON PALM-LEAF FANS.

Imported from—	1910	1911	1912	1913	1914	1915
Austria-Hungary	$76,299	$68,196	$86,178	$74,802	$50,210	$14,597
France	72,531	71,766	79,711	68,011	47,734	23,996
Germany	7,640	12,673	18,820	19,872	20,726	7,188
Spain	1,574	2,216	3,345	4,455	5,390	3,448
China	5,966	4,654	8,403	3,739	3,408	1,219
Hongkong	3,036	4,922	4,367	3,541	1,722	1,209
Japan	99,945	111,703	116,980	97,666	87,630	76,361
All other	3,085	6,817	2,298	3,829	3,861	1,699
Total	270,076	282,947	320,102	275,915	220,681	129,717

Imported from—	1916	1917	1918	1918[3]	1919[3]	1920[3]
Austria-Hungary	$1,073	.....	.....	.....	.....	.....
France	21,752	$31,294	$14,099	$4,507	$14,422	.....
Germany	155	.....	.....	.....	.....	.....
Spain	2,915	10,232	2,956	2,951	3,990	.....
China	3,068	2,474	2,148	1,054	1,048	.....
Hongkong	2,218	4,990	5,730	4,143	4,105	.....
Japan	51,716	78,504	66,394	50,849	31,349	.....
All other	758	881	2,563	1,235	1,203	.....
Total	83,655	128,375	93,890	64,759	56,117	$199,950

[3] Calendar year.

FANS, COMMON PALM-LEAF.

Imported from—	1910		1911		1912	
	Dozens.	Value.	Dozens.	Value.	Dozens.	Value.
China	769,101	$55,761	691,374	$58,125	918,782	$63,860
Hongkong	15,232	1,173	677	66	170,774	14,141
Japan	11,467	1,065	.....	.....	2,375	142
All other	64	7	.....	.....	.....	.....
Total	795,864	58,006	692,051	58,191	1,091,931	78,143

Imports by countries (fiscal years)—Continued.

FANS, COMMON PALM-LEAF—Continued.

Imported from—	1913		1914		1915	
	Dozens.	Value.	Dozens.	Value.	Dozens.	Value.
China	551,716	$47,595	582,884	$53,982	371,951	$33,507
Hongkong	64,863	6,155	31,724	3,704	80,965	8,817
Japan	1,875	173	2,500	300	17,500	1,925
All other	4	2	10	6	.....	.....
Total	618,458	53,925	617,118	57,992	470,416	44,249

Imported from—	1916		1917		1918	
	Dozens.	Value.	Dozens.	Value.	Dozens.	Value.
China	314,632	$29,988	258,369	$40,661	117,714	$23,876
Hongkong	8,303	954	96,027	14,638	381	69
Japan	2,575	335	500	60	.....	.....
All other	.....	.....	25	18	33	10
Total	325,510	31,277	354,921	55,377	118,128	23,955

Imported from—	1918 [1]		1919 [1]		1920 [1]	
	Dozens.	Value.	Dozens.	Value.	Dozens.	Value.
China	109,524	$21,426	168,825	$27,372	.....	.....
Hongkong	2,504	410	61,340	10,753	.....	.....
Japan	30	4	.....	.....	.....	.....
All other	33	10	6	3	.....	.....
Total	112,091	21,850	230,171	38,128	373,668	$99,828

[1] Calendar year.

Imports for consumption—Revenue.

FANS OF ALL KINDS, EXCEPT COMMON PALM-LEAF FANS.

Fiscal year.	Rate of duty.	Quantity.	Value.[1]	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Dozens.				*Per cent.*
1907	50 per cent ad valorem.	.....	$517,804	$258,902	.....	50
1908	do	.....	361,875	180,936	.....	50
1909	do	.....	213,940	106,970	.....	50
1910	do	.....	270,900	135,450	.....	50
1911	do	.....	280,174	140,087	.....	50
1912	do	.....	324,115	162,057	.....	50
1913	do	.....	278,332	139,166	.....	50
1914	do	.....	216,169	108,084	.....	50
1915	do	.....	131,460	65,730	.....	50
1916	do	.....	85,114	42,557	.....	50
1917	do	.....	132,308	66,154	.....	50
1918	do	.....	91,907	45,953	.....	50
1919	do	89,055	21,098	10,549	$0.237	50
1920	do	411,952	130,432	65,216	.317	50
1920 [2]	do	419,934	184,026	92,013	.433	50
1921 [3]	do	180,798	70,867	35,433	.....	50

[1] Excludes small amounts from Philippines and Cuba.
[2] Calendar year.
[3] 6 months ended June 30, 1921.

Imports for consumption—Revenue—Continued.

FANS, COMMON PALM-LEAF, PLAIN AND NOT ORNAMENTED OR DECORATED.

Fiscal year.	Rate of duty.	Quantity	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valerom rate.
		Dozens.				*Per cent.*
1907	Free	342,010	$22,130		$0.065	
1908	do	459,892	39,063		.085	
1909	do	420,937	27,729		.066	
1910	do	795,709	58,117		.073	
1911	do	691,496	58,192		.084	
1912	do	1,091,295	78,139		.072	
1913	do	703,188	53,925		.077	
1914	do	617,135	57,992		.094	
1915	do	474,170	44,249		.093	
1916	do	325,507	31,277		.096	
1917	do	344,605	55,153		.160	
1918	do	117,126	23,954		.205	
1919	do	137,278	20,736		.151	
1920[1]	do	442,956	110,003		.248	
1920[1]	do	373,693	99,835		.267	
1921[2]	do	268,612	49,215			

[1] Calendar year. [2] 6 months ended June 30, 1921.

Rates of duty.

FANS OF ALL KINDS, EXCEPT COMMON PALM-LEAF FANS.

Act of—	Par.	Tariff classification or description.	Rates of duty specific and ad valorem.
1883	428	Fans of all kinds, except common palm-leaf fans, of whatever material composed.	35 per cent ad valorem.
1890	.....	Not enumerated.	
1894	330	Fans of all kinds, except common palm-leaf fans	40 per cent ad valorem.
1897	427	do	50 per cent ad valorem.
1909	440	do	Do.
1913	349	do	Do.

FANS, COMMON PALM-LEAF.

1883	693	Fans, common palm-leaf	Free.
1890	564	Fans, common palm-leaf * * *	Do.
1894	474	Common palm-leaf fans, * * *	Do.
1897	552	Fans, common palm-leaf, plain and not ornamented or decorated in any manner, * * * .	Do.
1909	563	do	Do.
1913	480	do	Do.

COURT AND TREASURY DECISIONS.

The proviso to paragraph 410 of the act of 1909 was construed to cover all articles composed of tissue paper and by providing that such articles shall pay no less rate of duty than that imposed upon the component material of chief value of which any such article is made, the classification of tissue-paper fans was fixed as proper under that paragraph. (United States *v.* Mason, 2 Ct. Cust. Appls., 236, of 1911.)

Common palm-leaf fans alone being excepted, the natural and legal inference is that paragraph 384 is intended to embrace all other fans (United States *v.* Harper, 2 Ct. Cust. Appls., 101, of 1911), among them embroidered fans in chief value of silk. Paragraph 384 is more specific than the provision in paragraph 358 for "articles * * * embroidered * * * by whatever name known." (United States *v.* Field, 7 Ct. Cust. Appls., 430, of 1917.)

Folding fans are dutiable under this provision. (Abstract 38896, of 1915, following Abstract 33232, T. D. 33668, of 1913.)

GUN WADS.

General Information.

1913 tariff paragraph.—350. Gun wads of all descriptions, 10 per cent ad valorem.

Description and uses.—Gun wads are disks used to hold in place powder or shot, and are made of felt, cardboard, or jute.

Imports.—Imports for the period 1908 to 1916 ranged from $507 in 1916 to $3,716 in 1914. No imports are shown for the years 1917 to 1920, inclusive.

Tariff history.—The acts of 1883 and 1890 imposed a duty of 35 per cent ad valorem; those of 1894 and 1913, 10 per cent ad valorem; and those of 1897 and 1909, 20 per cent ad valorem. The tariff description has remained unchanged in all of these acts.

Gun wads—Imports for consumption—Revenue.[1]

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1908	20 per cent		$905	$181		20.00
1909	do		592	118		20.00
1910	do		728	145		20.00
1911	do		1,139	227		20.00
1912	do		1,592	318		20.00
1913	do		918	183		20.00
1914	do		2			
1914	10 per cent		3,714	371		10.00
1915	do		3,305	330		10.00
1916	do		507	50		10.00

[1] None shown for the years 1917–1921, inclusive.

Gun wads—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	440	Gun-wads, of all descriptions	35 per cent ad valorem.
1890	446	do	Do.
1894	331	do	10 per cent ad valorem.
1897	428	do	20 per cent ad valorem.
1909	441	do	Do.
1913	350	do	10 per cent ad valorem.

INDURATED FIBER WARE AND MANUFACTURES OF PULP, N. S. P. F.

General Information.

1913 TARIFF PARAGRAPH.

355. Indurated fiber ware and manufactures of pulp, not specially provided for in this section, 25 per centum ad valorem.

DESCRIPTION AND USES.

Indurated fiber ware is wood pulp chemically treated and molded into pails, kegs, tubs, boxes, cuspidors, coolers, trunks, cases, etc. Other manufactures of pulp include composite board for car ceilings, bulkheads, and door panels for steamboats, vulcanized fiber and fiber specialties for motors and dynamos, insulators, skate wheels, washers, disks and bushings, railway signals, electric rail joints, noiseless rollers and gears, fiber sheets, and fiber rods and tubing. Manufactures of papier-mâché and of vulcanized rubber come within paragraph 369.

PRODUCTION.

In 1914 production was valued at $4,483,000. There were 24 establishments located chiefly in Delaware and New York. The total capital was $6,862,000, and the number of wage earners 1,654.

TARIFF HISTORY.

Indurated fiber ware and manufactures of pulp were first specifically provided for in the act of 1890. They were made dutiable at 35 per cent ad valorem, which was also the rate in the acts of 1897 and 1909. The act of 1894 imposed a duty of 30 per cent ad valorem and that of 1913, 25 per cent.

INTERPRETATION AND COMMENTS.

Papier-mâché, a manufacture of paper pulp, might be transferred to this paragraph from paragraph 369, and the word "other" inserted between "and" and "manufactures."

Pulp goods [1]*—Production in United States.*

[From Federal census.]

Year and State.	Number of establishments.	Wage earners.	Capital.	Wages.	Cost of materials.	Value of products.
United States:						
1914	24	1,654	$6,862,000	$884,000	$2,191,000	$4,483,000
1909	14	783	2,680,000	377,000	971,000	1,770,000
1904	17	696	3,198,000	284,000	719,000	1,467,000
1899	22	691	2,317,000	284,000	647,000	1,267,000
1889	9	252	418,000	111,000	123,000	353,000
States, 1914:						
Delaware	8	892	3,436,000	486,000	1,028,000	2,145,000
New York	7	347	1,607,000	181,000	547,000	966,000
All other	9	415	1,819,000	217,000	616,000	1,372,000

[1] In this classification are included establishments engaged in the manufacture from wood pulp or paper chemically treated of such articles as pails, kegs and boxes, tubs, cuspidors, vases, measures, coolers, bases, trunks and cases, plates and dishes, jars, trays, etc. Composite board for car ceilings, bulkheads, and door panels for steamboats, vulcanized fiber and fiber specialties for motors and dynamos, automobile parts, insulators, skate wheels, washers, disks and bushings, railway signals, electric rail joints, noiseless rollers and gears, fiber sheets, and fiber rods and tubes were also reported. The manufacture of wood pulp itself, except so far as conducted by establishments making the finished products mentioned, and the manufacture of paper from wood pulp are not included. The statistics of pulp goods were first reported separately at the census of 1889. In addition to the products covered by the table, pulp goods to the value of $105,318 in 1914 and to the value of $52,231 in 1909 were reported by establishments engaged primarily in the manufacture of other products—paper and wood pulp, steam packing, and looking-glass and picture frames.

Fiber ware, indurated, and manufactures of pulp—Imports for consumption—Revenue.

UNDER GENERAL TARIFF.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1908	35 per cent		$1,685	$589		35.00
1909	do		423	148		35.00
1910	do		13,300	4,655		35.00
1911	do		1,399	489		35.00
1912	do		3,140	1,099		35.00
1913	do		2,874	1,005		35.00
1914	do		896	313		35.00
	25 per cent		3,613	903		25.00
1915	do		2,708	677		25.00
1916	do		4,442	1,110		25.00
1917	do		4,114	1,028		25.00
1918	do		4,771	1,192		25.00
1919	do		1,540	385		25.00
1920	do		2,010	502		25.00
1920[1]	do		5,806	701		25.00
1921[2]	do		146	36		25.00

[1] Calendar year.
[2] Six months ended June 30, 1921.

FROM PHILIPPINE ISLANDS (ACT OF AUG. 5, 1919).

1911	Free		$33			
1913	do		671			
1914	do		50			
1920	do		65			

Indurated fiber ware and manufactures of pulp, n. s. p. f.—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	.....	(Not enumerated.)	
1890	461	* * * indurated fiber wares and other manufactures composed of wood or other pulp, or of which these substances or either of them is the component material of chief value, * * * not specifically provided for in this act.	35 per cent ad valorem.
1894	353	* * * indurated fiber wares, and other manufactures composed of wood or other pulp, or of which these substances or either of them is the co nponent material of chief value, * * * not specially provided for in this act.	30 per cent ad valorem.
1897	433	Indurated fiber ware and manufactures of wood or other pulp, and not otherwise specially provided for.	35 per cent ad valorem.
1909	447	Indurated fiber ware and manufactures of pulp, not specifically provided for in this section, printed or unprinted.	Do.
1913	355	Indurated fiber ware and manufactures of pulp, not specially provided for in this section.	25 per cent ad valorem.

○

UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPH 348 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

FURS AND FUR GOODS

Paragraph 348:
- Dressed Furs.
- Plates and Mats of Dog and Goat Skins.
- Manufactures of furs, prepared for use as materials.
- Hatters' Fur.
- Wearing Apparel.

Paragraph 491:
- Furs, undressed.

Paragraph 603:
- Skins of Hare, Rabbits, etc.

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and index" the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Charles F. Yauch, of the Commission's staff, and of others.

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FURS AND FUR GOODS.

FURS AND MANUFACTURES OF FURS, EXCEPT FUR HATS, BONNETS, AND HOODS.

SUMMARY.

Production and consumption of raw furs and fur goods.—The United States is the leading country in the production, manufacture, and consumption of raw furs and fur goods. A fur merchant has stated in a letter to the commission that New York City manufactures more fur goods than London, Paris, Leipzig, Vienna, and Moscow combined. The amount in quantity or value of production of raw furs in the United States can be estimated only. The sales of raw furs in New York and St. Louis in 1919 amounted to about $35,000,000, which, however, includes the value of foreign furs consigned to these points for sale, but excludes quantities of domestic furs used locally. The amount is probably below rather than above the domestic production.

In 1914 the value of dressed furs and manufactures of furs amounted to $2,875,000 and $43,633,000, respectively, as against total imports of $5,099,000 and exports of $870,824. In 1916 it was estimated that $61,000,000 was a conservative estimate of the value of fur goods bought annually by the people of the United States. Revenue collections under the 10 per cent excise tax on articles made of furs amounted to over $15,000,000 for the fiscal year 1920.

Sources of supply of raw furs.—Pelts of animals used in the fur goods industry come from all parts of the world. The pelts most generally used are those of animals which inhabit cold countries. The chief foreign producing countries are Russia, Siberia, China, Australia, Canada, and parts of South America.

The principal fur markets are London, Leipzig, Paris, Petrograd, Moscow, and Irbit in Siberia. The United States, due largely to the war, has taken the lead in the distribution of furs. New York and St. Louis are now equal in importance to any fur markets of the world, and are important centers in the international trade in furs.

There is much substitution and imitation of the more expensive furs. Low-grade furs by skillful dyeing and dressing can be made to resemble the more expensive ones, so that only an expert in furs can detect the difference.

Organization.—The collection of furs lies principally with large companies. Dressing and dyeing of furs is generally conducted as a separate industry by establishments of rather small units. Of the 96 establishments in 1914 three had a product in excess of $100,000, their combined product amounting to $1,985,000, or about 38 per cent of the total. The total wage earners were 1,525.

In 1914 there were 1,322 establishments with a capital of $29,677,371 engaged in the manufacture of fur goods. Of the total

establishments, 1,235 had a combined product of $23,774,000, or nearly 55 per cent of the total. One establishment had a product in excess of $1,000,000. The total wage earners were 9,030.

Geographical distribution.—Both the dressed furs and fur goods industries are centered in Greater New York. In 1914 about 68 per cent of the value of dressed furs and about 66 per cent of the value of fur goods were produced in that city.

Domestic exports.—Raw furs before the war were exported principally to England, Germany, Canada, France, and Belgium. In the year 1913 domestic exports amounted to $17,465,000 and in 1920 to $30,137,000.

Exports of dressed furs and manufactures of furs increased in value from $615,441 in 1912 to $8,745,757 in 1920. Canada was the principal purchaser before the war and has continued to be a steady and large purchaser. England did not begin to figure prominently in the trade until 1915. France became a large importer in 1916, and in 1920 took $4,011,338, or 45.9 per cent of the total exports. The export trade in dressed furs and fur goods with Argentina amounted to only $195 in 1913 as against $436,857 in 1920.

Imports.—Statistics of imports of raw furs by countries show the fur markets rather than the countries of origin. The principal countries exporting raw furs to the United States were, before the war, Germany, England, Canada, Belgium, France, Russia, and Australia. Imports from China, Russia in Asia, Japan, and Argentina, which before the war were small, show big increases in the value of furs exported. The largest prewar imports of raw furs amounted to $17,339,000 in 1912. The total value in 1920 amounted to $103,772,000. Part of this enormous increase is due to the rise in the price of furs, the growing importance of New York and St. Louis as world markets, and the increased demand in the United States for furs of all kinds.

Dressed furs on the skin came principally from Germany, France, Belgium, and England. They averaged somewhat over $5,000,000 before 1914. In 1920 they amounted to $6,529,000.

Importation of manufactures of furs compared with production in the United States are relatively small. France, Germany, China, and England were the principal suppliers before the war. In 1912 imports amounted to $2,301,000 and in 1920 to $4,913,000.

Plates and mats of dog and goat skins are imported principally from China and are used in the manufacture of the cheaper fur coats. The importation of wearing apparel made of fur is small. In 1913 the value was $392,000. The tariff act of 1913 divided wearing apparel into two groups: (1) Composed of or in chief value of hides or skins of cattle, dog, or goat, and (2) composed of or in chief value of fur, n. s. p. f. The highest importation under the first group was in 1918, when they amounted to $19,575. In 1920 the value of such articles imported amounted to $1,447. Under the second group the highest amount was reached in 1914, $344,507. In 1920 the amount was $94,240. Hatters' fur showed a tendency to decline in value until 1920, when imports amounted to 398,286 pounds, valued at $1,565,000, the highest in value for the period 1907–1920.

Competitive conditions.—Raw furs are imported free of duty into all countries except Russia. This international free trade may be attributed to the fact that the raw furs of one country are not com-

petitive with those of another country. Even furs of the same specie of animals vary greatly according to the region where obtained, and for this reason it may be said they are not competitive with each other. Fashion governs very largely the kinds of furs used without regard to the country of origin. The real competition lies in the marketing of the furs.

Foreign competition is felt in the dressing and dyeing of furs. It has been generally recognized in the past that Europeans excel in the art of dressing and dyeing furs. England owes her prominence in this branch of the fur industry to the peculiar property of the water and to secret processes and methods. It was not until 1913 that the United States Government sent the sealskins, collected on Pribilof Islands, to St. Louis to be dressed, dyed, and sold. They were formerly sent to London for that purpose. Germany also had a strong hold on the dressing and dyeing of furs, and the establishments at Leipzig engaged in this branch of the fur industry were noted for the excellence of their work. The French influence on the trade is primarily one of style and combination of colors. Previous to the war the best sealine and seal-dyed rabbit skins came from Germany, France, and Belgium. The war gave a great impetus to the industry in the United States, and it is now claimed that American dyers and dressers can produce furs which are unrivalled in color, sheen, suppleness, strength, and beauty.

American fur dressers and dyers have stated at tariff hearings that they have found it impossible to compete with the cheap foreign labor, especially that employed on the poorer grade of furs. Producers of hatters' furs have stated that labor cost in Europe is from 45 to 52 per cent less than in the United States, that substantially all chemicals and dyes used in their trade are cheaper abroad, and that they have been able to maintain the advantage over the foreigner only through quick deliveries and the granting of liberal lines of credit.

SUMMARY TABLE.

Furs and manufactures of furs, except fur hats, bonnets, and hoods.[1]

Fiscal year.	Imports for consumption.			Domestic exports.	Amount of duty.	Equivalent ad valorem rate on dutiable imports.
	Raw furs (free).	Dressed furs and manufactures of furs (dutiable).	Total.			
						Per cent.
1910	$15,591,336	$9,865,034	$25,456,670	$14,501,635	$2,336,966	23.69
1911	15,334,375	7,464,787	22,799,162	10,473,517	1,800,896	24.13
1912	17,404,721	7,359,945	24,764,666	14,975,449	1,677,452	22.79
1913	16,768,679	6,988,677	23,757,356	18,389,586	1,645,315	23.54
1914	11,521,374	5,098,711	16,620,085	14,969,371	1,284,720	25.20
1915	7,768,921	2,253,057	10,021,978	3,794,459	601,378	26.69
1916	16,875,685	2,883,786	19,759,471	9,288,786	751,816	26.07
1917	21,547,323	4,004,554	25,552,377	15,729,160	947,003	23.65
1918	35,627,633	1,938,166	37,565,799	13,903,631	402,332	20.76
1919	37,959,971	2,129,236	40,089,207	14,612,015	379,347	17.81
1920	103,764,703	8,620,685	112,385,388	38,883,097	2,104,877	24.42

[1] "Dressed furs" to the value of $2,875,036 and "fur goods" to the value of $43,632,693 were produced in the United States in 1914.

General Information.

1913 TARIFF PARAGRAPHS.

Paragraph 348. Furs dressed on the skin, not advanced further than dyeing, 30 per centum ad valorem; plates and mats of dog and goat skins, 10 per centum ad valorem; manufactures of furs, further advanced than dressing and dyeing, when prepared for use as material, joined or sewed together, including plates, linings, and crosses, except plates and mats of dog and goat skins, and articles manufactured from fur not specially provided for in this section, 40 per centum ad valorem; articles of wearing apparel of every description partly or wholly manufactured, composed of or of which hides or skins of cattle of the bovine species, or of the dog or goat, are the component material of chief value, 15 per centum ad valorem; articles of wearing apparel of every description partly or wholly manufactured, composed of or of which fur is the component material of chief value, not specially provided for in this section, 50 per centum ad valorem; furs not on the skin, prepared for hatters' use, including fur skins carroted, 15 per centum ad valorem.

Paragraph 491. Furs and fur skins, undressed, free.

Paragraph 603. Skins of hares, rabbits, dogs, goats, and sheep, undressed, free.

DESCRIPTION.

This survey is not confined to a specific article, but covers all articles coming under the fur industry, with the exception as noted in the title. These articles may be divided into three groups: (1) Furs and fur skins, undressed; (2) furs and fur skins, dressed or prepared in some manner for further use in manufacture; and (3) manufactures of furs.

The first group includes simply the skins which have been removed from fur-bearing animals. They are spoken of in the trade as pelts. The second group includes furs dressed on the skins, plates, and mats of dog and goat skins, manufactures of furs prepared for use as materials, and hatters' fur. The third group includes wearing apparel and other completed articles made of fur.

All of the articles coming under the second group, however, do not carry the same rate of duty, the rates varying according to the stage of manufacture and to the class of material of which the articles are composed. The same is true of articles in the third group.

The Bureau of the Census in the Census of Manufactures gives separate data for two groups only, namely: (*a*) Furs, dressed; and (*b*) fur goods. The former covers data for establishments engaged primarily in the preparation of fur skins, including scraping, currying and tanning, and bleaching and dyeing. Hatters' fur, dressed hair, and bristles are also reported in this group. The fur-goods industry covers data for establishments engaged in the manufacture of fur sets and furs, including boas, capes, collars and collarettes, muffs, stoles, fur coats and cloaks, fur and fur-lined overcoats, fur hats, caps, gloves, and mittens, and various minor products as bands, rugs, tippets, heads, tails, and paws. In some instances establishments engaged primarily in the manufacture of fur goods dress and tan skins, thus overlapping with the dressed-furs industry.

Plates and mats are trade names for certain standard sizes of furs. They are not separate skins, but consist of two or more skins joined or sewed together to bring them up to the standard of measurement and for convenience in transportation.

Crosses and linings are pieces of furs sewn together and made up into the form of crosses, squares, or linings.

Hatters' fur consists of the soft underfur of the rabbit, hare, nutria, or beaver when removed from the skins and prepared for use in the manufacture of fur-felt hats. Fur skins carroted are skins which have been treated with a solution of nitric acid and quicksilver to protect them from damage by insects and to facilitate the succeeding operations of manufacture.

Hatters' fur in the finished hat does not resemble furs as generally recognized. Through the processes of manufacture the fur loses its identity and becomes a fibrous substance.

DOMESTIC PRODUCTION.

GROUPS OR DIVISIONS.

Raw furs.—Statistics of production are unobtainable. The importance of the annual production of domestic furs is apparent from the sales held in New York and St. Louis, which in 1919 amounted to about $35,000,000. This figure includes many foreign furs, but it does not include large quantities of domestic furs which are used locally, and is probably below rather than above the domestic production.

Dressed furs.—Fur dressing and dyeing is the intermediate process between securing the pelts and manufacturing them into garments and other articles. It is usually conducted as an independent industry. In 1914 there were 96 establishments employing on the average 1,525 wage earners and turning out a product valued at $2,875,036. In addition products valued at $8,850 were reported by establishments assigned to other industries.

Fur goods.—In 1914 there were 1,322 establishments engaged in the manufacture of fur goods. The average number of wage earners amounted to 9,030 and the value of the product to $43,632,693. In addition products valued at $813,550 were reported by establishments engaged primarily in the manufacture of men's and women's clothing, millinery and lace goods, leather gloves, mittens, and horse furnishings.

Fur for hatters' use.—There are no separate data for this branch of the fur industry. The value of the product is included by the census with that reported for "Furs, dressed," or "Hat and cap materials."

MATERIALS.

Raw furs.—Raw furs form the material for the fur-dressing industry, and the dressed furs in turn become the material of the fur-goods industry. The domestic pelts most commonly used in making wearing apparel and other manufactures of fur are muskrat, skunk, opossum, and raccoon. Other domestic pelts of which large quantities are used are fox, wild cat, lynx, otter, beaver, badger, mink, and civet cat, a species allied to the skunk. In addition to these the census lists the following as the principal kinds of fur skins used in

the fur-goods industry: Bear, caracal, coney, ermine, hare, marmot, marten, rabbit, Chinese weasel, rat, nutria, sable, seal (Alaska and hair), squirrel, angora and Chinese goat, Bulgarian, Chinese, and Persian lamb, calf, dog, horse, kangaroo, kid, Russian pony, sheep, and wolf.

Chief sources of supply.—Pelts of animals used in the fur-goods industry come from all parts of the world. The pelts most generally used are those of animals which inhabit cold countries. Countries in the Tropics, however, are not devoid of animals whose pelts are in demand.

Russia, Siberia, China, Australia, Canada, United States, and South America are the chief countries from which raw furs are obtained. Chinchilla and nutria are practically the only furs which come from South America.

Russia and Siberia export pelts of the hare, rabbit, otter, beaver, bear, sable, sheep, goat, wolf, fox, lynx, squirrel, badger, ermine, fitch, kolinsky, marten, mink, and marmot. Canada produces bear, beaver, fox, lynk, marten, mink, muskrat, otter, and seal. Australia furnishes pelts of the hare, rabbit, kangaroo, opossum, wallaby, and wombat. China is the chief source of supply of dog, goat, and sheep skins. In China dogs are raised for the value of their skins. The skins are generally sewed together and are known as plates and mats.

Adequacy of supply.—The number of pelts of the smaller fur-bearing animals which is brought to the markets annually is very great. The advance of civilization upon the domains of these animals seems to increase rather than diminish their number. Among the smaller fur-bearing animals in the United States which seem to be increasing in number may be mentioned the muskrat, skunk, mink, fox, mole, weasel, and raccoon. The large fur-bearing animals, however, are decreasing in number.

Domestication and breeding of fur bearing animals.—The demand for furs is ever increasing, which, together with the scarcity of some kinds of furs, has led to the domestication and breeding of fur-bearing animals on a commercial scale in Canada, Russia, Germany, and the United States. Fur farming or ranching has been extended to the raising of foxes, beavers, martens, minks, muskrats, fishers, raccoons, sables, otters, and skunks.

The raising of rabbits and hares on the Continent of Europe is an industry of long standing. The French and Belgians raise many rabbits which have a good fur. This fur when dyed and dressed is put on the market in large quantities, but generally under another name.

In Canada the raising of black and silver foxes for their skins is now on a commercial footing, although admittedly a highly speculative business. Domestication of the black fox began about 1888 on Prince Edward Island and that of the silver fox about 30 years ago. Mink, raccoon, fisher, beaver, and muskrat are also found on Canadian fur farms.

In the United States, minks appear to have been the first of the wild fur-bearing animals to be raised for their fur. A resident of

Oneida County, N. Y., began to breed them shortly after the close of the Civil War. There are areas in the salt marshes of the Delaware and Chesapeake Bays where the muskrat is protected and the owners let out the "ratting" privileges. Fox farming has been conducted successfully in widely scattered localities. The breeders of skunks, however, outnumber the breeders of all other fur-bearing animals.

The species of rabbit from which hatters' fur is made are not indigenous to the United States, and it has not been possible to breed them and still retain the commercial characteristics of the fur.

With increased fur farming as a business and as a side line for farmers, together with the enactment of laws by the various States for the protection of fur-bearing animals, the prospects are fair for a future adequate supply of furs.

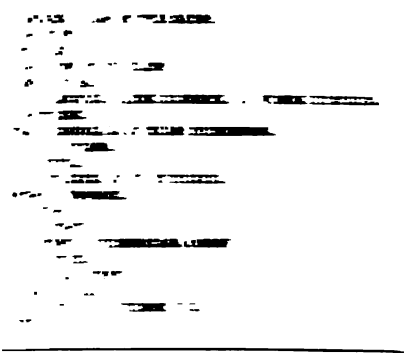
Substitution and imitation of furs.—Many furs are so finished and dyed as to retain little of their original appearance. By skillful dressing and dyeing, low-grade furs are made to resemble the more expensive ones. Skunk skins sent to England to be made up have come back as imported black marten or Alaska sable. The leopard skin is imitated; muskrats and marmots are striped like mink; martens, minks, and sables are darkened; raccoons, opossums, and white skunks are dyed black or natural skunk color; and silver foxes are successfully imitated.

The London Chamber of Commerce issued a list of the most common misdescriptions of manufactured furs. The list gives an excellent idea of the evil complained of and is as follows:[1]

American sable	Real Russian sable.
Fitch, dyed	Sable.
Goat, dyed	Bear.
Hare, dyed	Sable or fox.
Kid	Lamb or broadtail.
Marmot, dyed	Mink, sable, or skunk.
Mink, dyed	Sable.
Musquash, dyed	Mink or sable.
Musquash, pulled and dyed	Seal, electric seal, Red River seal, or Hudson seal.
Nutria, pulled and dyed	Do.
Nutria, pulled, natural	Beaver and otter.
Opossum, sheared and dyed	Beaver.
Otter, pulled and dyed	Seal.
Rabbit, dyed	Sable or French sable.
Rabbit, sheared and dyed	Seal, electric seal, Red River seal, Hudson seal, and seal musquash.
Rabbit, white	Ermine.
Rabbit, white, dyed	Chinchilla.
Wallaby, dyed	Skunk.
White hare	Fox and other similar names.
Dyed furs of all kinds	"Natural."
White hairs inserted in foxes and sables	Real or natural furs.

It is only fair to add that these more serious misdescriptions occur principally in advertisements appearing in the newspapers offering furs for sale at private addresses.

[1] Daily Consular and Trade Reports, 1911, p. 1028.



dealers in Canada and the
original, and natural
for consignment to

London or Leipzig. Canadian furs sold to New York merchants were often resold to merchants in Canada. Canada was also a large purchaser of raw European furs in the New York market. It was stated at the tariff hearings in 1913 that Canadian fur merchants purchased 50 per cent of their entire supply through United States merchants. It was also stated that raw furs brought into this country from China, Japan, and Australia are largely articles of international trade, most of them being reshipped to other countries in their raw state.

Classification of furs.—Furs are in many cases articles of luxury, and their use is subject to the whims of fashion and restricted to the rich. On the other hand there are many furs that serve as articles of general utility and provide a most effective apparel for resisting cold and inclement weather. It is impossible to draw with precision a line between furs as luxuries and furs as necessities. In response to inquiries from Congress for information along this line, the following classification was submitted to the chairman of the Committee on Finance of the United States Senate, by fur merchants of St. Paul, in a brief filed with the committee in 1913:[2]

Furs as articles of luxury.—Russian sable, marten, ermine, mole, lynx, black fox, silver fox, sea otter, fisher, fur seal, blue fox, white fox, chinchilla, polar bear, and grizzly bear.

Furs not made into articles of luxury, but are used by people of small means.—Marmot, hare and rabbit, wolf, raccoon, red fox, kitt fox, pony, house cat, wildcat, opossum, muskrat, Japanese mink, Chinese weasel, kangaroo, dog, goat, sheep and lamb, hair seal, wool seal, wombat, and wallaby.

Furs used by people of moderate means whenever prices are low, but which sometimes are fashionable and then are higher in price.—Squirrel, black and brown bear, badger, civet cat, beaver, holinksky, mink, fitch, nutria, skunk, wolverine, otter, and cross fox.

Manufacturers of fur may be divided into four groups: (1) Those producing the highest grade furs, (2) those producing medium grades for the better class of the dry goods trade, (3) those making a specialty of so-called popular-priced furs, and (4) those producing only low-grade coarse furs.

Equipment.

In the dressing and dyeing of skins the following apparatus is used: Washing tanks, drying vats, cleaning drums, polishing drums, wooden tanks for dyeing, revolving stone cylinders for beaming, and kicking machines for pounding the skins, and shearing and unhairing machines. Sewing machines, specially designed, form the principal equipment of the manufacturer of fur-wearing apparel.

The advent of the dehairing machine has done a great deal to change the fur-manufacturing business. By the use of this machine the long hairs of the outer coat of the seal, beaver, muskrat, mink, otter, and other fur animals can be removed, leaving only the soft under fur. German and American fur-sewing machines were introduced about 1890 and resulted in better work being done.

American furriers are generally considered leaders in ingenuity and latest methods of manipulating skins.

Methods of production.

The older method of dressing furs was to place the pelts in an alkali bath in order to soften them. The pelts were then tubbed,

[2] Tariff Hearings, Committee on Finance U. S. Senate, 63d Cong., 1st sess., Vol. III, p. 1590.

[illegible] large [illegible] product in excess of [illegible] aggregated [illegible] per cent of the total product. The number [illegible] establishments employing 50 or less was 841, or [illegible] per cent of the total. Eight establishments employed no [illegible] and one 546

[illegible] industry, comprises 1,322 establishments with an [illegible] capital of $81,077,371. Individual ownership also prevails in the [illegible] there being 711 individual, 143 corporate, and [illegible] partnership. There were 1,235 establishments [illegible] a product of less than $100,000, their aggregate product [illegible] to [illegible] or nearly 5.5 per cent of the total. One establishment had a product in excess of $1,000,000. Of the total

wage earners, 7,426, or 82.3 per cent, were in establishments employing 50 or less wage earners. One establishment, the largest, employed on the average 335 wage earners.

GEOGRAPHICAL DISTRIBUTION.

Both the dressed furs and the fur goods industries are centered in Greater New York. In 1914 about 68 per cent of the total value of dressed furs and about 66 per cent of the fur goods were produced in that city. Most of the establishments engaged in dressing furs are located in Brooklyn, and those engaged in the production of hatters' fur are located within a radius of 100 miles of New York City. Other centers of the dressed furs industry are located in New Jersey, Pennsylvania, Minnesota, Wisconsin, and Illinois. Other important centers in the fur-goods industry are St. Paul, Chicago, Detroit, Boston, Philadelphia, Minneapolis, Milwaukee, and San Francisco.

DOMESTIC PRODUCTION AND CONSUMPTION.

The United States is the leading country in the production, manufacture, and consumption of furs and fur goods. Statistics showing the number or value of raw furs collected are not obtainable. In 1919 the value of furs sold at St. Louis and New York was about $35,000,000, including, however, some imported furs, but excluding large quantities of domestic furs which were used locally. In the fiscal year 1919 imports of raw furs amounted to $38,000,000, domestic exports to $10,275,000 and reexports of foreign furs to $148,000.

In 1914 there were imported into the United States dressed furs and manufactures of furs to the value of $5,099,000, as against production for that year of $2,875,000 in "furs, dressed," and $43,633,000 in "fur goods," and of domestic exports $870,824 for both "furs, dressed," and "manufactures of furs." Production data for 1919 are not yet available.

In an article on the fur trade of the United States appearing in Commerce Reports 1916, $61,000,000 was given as an estimate of the total value of manufactured furs annually bought by the people of the United States.

That the estimate for 1916 is far below the value of fur goods consumed by the people in the United States at the present time (1920) there can be no doubt. The revenue act of 1918 provided for an excise tax of 10 per cent on all articles made of fur on the hide or pelt or of which any such fur is the component material of chief value. A report of the Internal Revenue Bureau shows that the collections under the provision relating to furs for the fiscal year 1920 amounted to $15,300,000. It is stated by a fur merchant in a letter to the commission that "more fur goods are manufactured in New York than in London, Paris, Leipzig, Vienna, and Moscow combined."

The importation of raw and to a certain extent of dressed furs is due to the fact that a number of fur-bearing animals are not indigenous to the United States and must be imported if the demand is to be satisfied. It is in the dyeing and dressing of furs that foreign competition is felt. The importation of fur goods is small compared with the domestic production.

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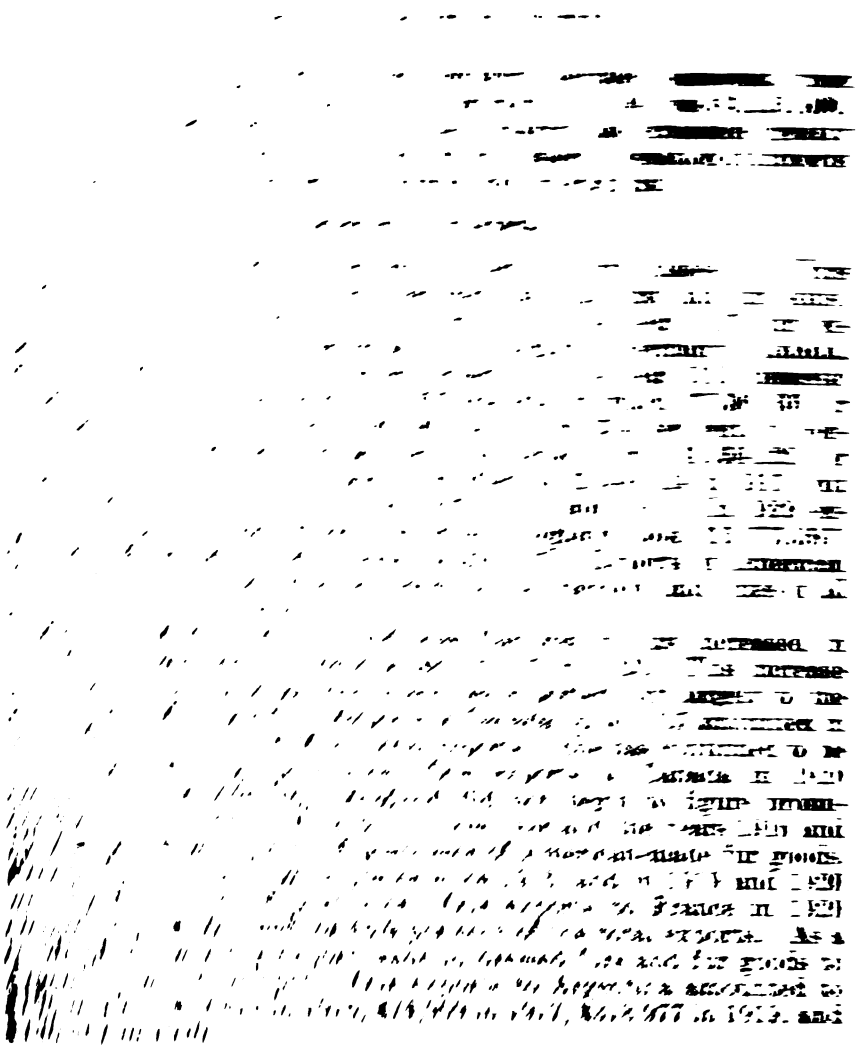

Canada is about the only other foreign country which publishes statistics of production. In a preliminary report on the hat, cap, and fur industry for the calendar year 1918 the Dominion Bureau of Statistics states that the total capital investment amounted to $14,431,530, cost of materials at factory $8,438,424, and selling value of product at the factory $17,112,425. The following tables show the cost of the various materials used as well as the articles made and their selling value.

COST OF MATERIALS AND VALUE OF PRODUCTS.

The cost at the factory of the various materials used by Canada's hat, cap, and fur industry during 1918 was reported to the Dominion Bureau of Statistics as:

Materials used.	Cost value at factory.	Materials used.	Cost value at factory.
Furs and skins:		Trimmings, all kinds	$194,770
Raw	$1,774,470	Straw and straw plaits	440,644
Dressed	2,678,144	Thread, buttons, and fasteners	109,589
Woolen goods	1,030,747	Canvas, wadding, etc	44,826
Cotton and other goods	266,850	Leather for sweat bands	74,143
Silk and satin	477,573	Dyestuffs and chemicals	99,615
All other linings	205,881	All other materials	847,758
Muff beds and quilted linings	115,452		
Coat shells	78,012	Total	8,438,424

The selling value at the factory of the different articles made during the year was:

Articles made.	Selling value at factory.	Articles made.	Selling value at factory.
Men's coats:		Muffs	$1,172,430
Fur	$1,214,430	Stoles and other neckwear	1,452,988
Fur lined	261,231	Gloves and gauntlets, fur or fur lined	225,256
Women's coats and jackets:		Muff beds	101,499
Fur	3,632,695	Coat shells	4,100
Fur lined	329,267	Robes	283,224
Caps:		Straw hats and shapes	1,345,461
Fur	165,400	Velvet hats and shapes	809,086
Cloth	2,264,737	All other products	148,114
Uniform	402,763	Received for custom work and repairing	1,577,752
Hats:			
Fur	1,355,254	Total	17,112,425
Wool	384,658		

In a report on the hatters' fur industry in Belgium, Consul Naysmith, Ghent, states:

From January 1 to July 1, 1920, the total value of raw rabbit skins to the United States was 17,863,437 francs ($1,786,343), while the value of hatters' fur was 7,497,372 francs ($749,737). For 1919 the value of the exports of rabbit skins to the United States was $64,206 and of hatters' fur $15,323. Their combined value in 1913 was $1,590,438.

In a letter to the State Department, copy of which has been forwarded to the Tariff Commission by that department, the Belgian Embassy presents a representation, by the tanners and dyers of skin in Belgium, of conditions facing the Belgian rabbit-skin industry with relation to the American market.

It sets forth that prior to the war the United States furnished a market for approximately 50 per cent of their prepared rabbit skins, but that now (January, 1921), in view of the increased price of the

prepared skins and the consequent increase in the customs duty by reason of the ad valorem rate, the cost to the American importer is prohibitive. In detail, it is stated that formerly the prepared skins were offered in Belgium at 10 francs a dozen. The customs duty, at 30 per cent ad valorem, was 3 francs, or a cost (duty paid) to the American importer of 13 francs a dozen. Compared with this, the skins are now approximately 40 francs a dozen. This means a duty of 12 francs, or a total cost of 52 francs.

It is claimed that without the American market the industry can not survive, and the request is made that a new tariff classification provide for prepared rabbit skins at a rate of duty lower than that which now applies (Par. 348: Furs dressed on the skin).

The memorandum further sets forth:

> They respectfully beg to call attention to the fact that the American manufacturers find an almost open market for their goods in Belgium. A great many American furs, particularly those of an expensive nature, are imported from the United States into Belgium, and the customs duties applied to them is decidedly less than the customs duties applied to the rabbit skins, which is a cheap fur, when imported into the United States. The Belgium customs duty never exceeds, even for the most expensive furs, 0.90 franc per kilo. The following appears to be the consequence: While 5 skunk skins, weighing 1 kilo and valued at about 500 francs, are taxed by the Belgian customs officials only 0.90 franc, 12 rabbit skins, on the other hand, weighing 1 kilo also, but valued at 100 francs, are taxed by the American customs officials 30 francs: the Belgian manufacturers thus pay 30 francs duty on 100 francs, while the American manufacturers do not pay more than 1 franc (to be exact 0.90 franc) per 500 francs.
>
> The manufacturers entertain the opinion that the rabbit skin is not an article of luxury, and they take the liberty to set forth the request that, on that ground, it be reclassified so that a customs duty lower than the one which is imposed on the first be applied to it.
>
> Only if it be done can they find again in the United States a market for their goods, and without that market their industry is bound to fail.

IMPORTS.

Raw furs.—Statistics of imports of raw furs by countries show the fur markets rather than the countries of origin. Many of the raw furs imported from England and Germany are furs which have been sent there from other countries for sale in the London and Leipzig markets. General imports do not show the kind of skins imported from the various countries. Imports for consumption show the kinds of skins imported but not the countries from which imported. The principal kinds of fur skins imported, as shown in the imports for consumption, are beaver, hare and rabbit, fox, mink, marten, mole, muskrat, seal, and squirrel. Some of the important raw furs imported are muskrat, mink, marten, bear, fisher, fox, otter, seal, beaver, and wolf, from Canada; sable, ermine, kolinsky, seal, wolf, otter, and squirrel, from Russia; rabbit, kangaroo, opossum, wallaby, and wombat, from Australia; nutria and chinchilla, from South America. Undressed rabbit skins are also imported from France, Belgium, and Germany.

Our largest prewar imports of raw furs amounted to $17,339,198 in 1912. The value for the year 1913 was slightly less. In 1914 and 1915 the value of imports decreased about one-half but rose to prewar figures in 1916. Imports for the years 1918 and 1919 were more than double the prewar amount. The value of raw furs imported into the United States in 1920 amounted to $103,772,044, which is nearly six times that of 1912. This enormous increase in the value of raw furs imported may be attributed to the rise in the price of

furs, the growing importance of New York and St. Louis as world fur markets, the increased demand in the United States for furs of all kinds, improvement in the art of dressing and dyeing furs in the United States, and to the fact that the fur merchants and fur dressers and dyers of Europe are not functioning on a prewar basis.

The countries from which we imported the largest amounts of furs before the war were, in the order of importance, Germany, England, Canada, Belgium, France, Russia, and Australia. Imports from all countries, except Germany, Russia in Europe, and Belgium, increased greatly in 1920 as compared with those of 1912. Increases occurred in the value of imports from the following countries: France, England, Canada, and Australia. Countries—China, Russia in Asia, Japan, and Argentina—from which small quantities were imported before the war also show surprising increases in 1920 over 1912. The increases in the value of imports from these countries may be accounted for partially by higher prices, direct shipments to the United States instead of through the European fur markets, and in case of China and Japan, their being intermediate markets for collection of furs before final shipment to the United States. It is possible that the increased use of furs in the United States has caused a demand for furs which were formerly not in demand. This may also account partially for the increases in the value of imports from certain countries, but as no statistics are available which show the kinds of furs imported by countries, the extent of such trade can not be determined.

Dressed furs.—Imports of furs dressed on the skin which before 1914 were on the average somewhat over $5,000,000 a year decreased greatly after that date. In 1919 they reached their lowest point, $783,061. However, in 1920 imports had again reached prewar figures; in fact, had exceeded them. Imports for 1920 were valued at $6,528,733. Germany, France, Belgium, and England were the principal sources of imports before 1914. Imports from China formed about 31 per cent of the total in 1917 and over 50 per cent in 1918, but dropped in 1919 to less than prewar figures.

Manufactures of fur.—Imports of manufactures of furs came principally from France, Germany, China, and England before 1914. Of the total imports of $2,301,284 in 1912 $1,063,852, or 46.2 per cent, came from France; $569,227, or 24.7 per cent, from Germany; $191,647, or 8.3 per cent, from China; and $160,595, or 7 per cent, from England. In 1919 China sent $964,630, or 56.9 per cent; France, $325,058, or 19.2 per cent; England, $149,788, or 8.8 per cent; and Canada, $146,727, or 8.6 per cent. Total imports for 1920 amounted to $4,913,448, being more than double the prewar figures.

Imports for consumption show somewhat in detail the character of the goods described as manufactures of furs.

Plates and mats of dog and goat skins.—Imports of plates and mats of dog and goat skins have increased from $280,855 in 1914 to $1,029,852 in 1919. The number of such articles imported in 1919 amounted to 766,115, with an average value per unit of quantity of $1.34. These articles come principally from China and are used in the manufacture of the cheaper fur coats.

Manufactures of furs prepared for use as materials.—Included in this description are manufactures of furs further advanced than dressing and dyeing, plates and mats, except those of dog and goat skins, linings and crosses. Imports of such articles when made of

seal skin are small. In 1919 they amounted to $83. Other articles coming under this description have declined in value from $1,689,340 in 1910 to $50,265 in 1919.

Wearing apparel.—The tariff act of 1913 divided wearing apparel made of fur into two groups, (1) that composed of hides or skins of cattle, dog, or goat; (2) that composed of fur not specially provided for. Imports of the former were valued at $19,575 in 1918 and $85 in 1919. Imports in other years have been small. The value of imports under the second group reached the highest mark in 1914, $344,507. In two other years, 1917 and 1918, the value exceeded $100,000. In 1919 imports were valued at $13,599.

Hatters' fur.—This fur is used in the manufacture of fur-felt hats. In 1910 imports were valued at $1,499,815, the highest. In 1914 they amounted to $607,254, of which $108,052 were under the tariff act of 1909. Although there had not been a regular decrease in value of such furs imported, the tendency was toward a decline until 1920. These were imported 80,422 pounds, valued at $228,721, in 1919, and in 1920, 398,286 pounds, valued at $1,565,000.

PRICES.

Furs, like most other articles, have advanced to record heights within the last few years. The wholesale price of furs varies widely not only according to different species, but also to different grades of the same species. As an illustration of the wide range in prices, a fine silver fox skin sold for $1,000 in 1919 as against $150 to $200 for an average silver fox skin and $10 for a cheap red fox skin. It is stated that 25 fox skins of animals raised in captivity were sold in London in 1910 at an average of $1,400 each, and that the highest price paid for a single skin was $2,700. Top wholesale prices for raw furs in 1913 and 1920 are given for the following skins: Mink, $20 and $75; muskrat, $1 and $6.80; seal, $120 and $175; Australian rabbit, 90 cents and $4.20 per pound; beaver, $30 and $64; ermine, $5 and $4.75; blue fox, $100 and $270; red fox, $35 and $64; and moles, 50 cents and 70 cents.

Consul General Skinner, London, in writing on the fall fur sales in London, November, 1920, states:

> A general decline in prices has set in and, compared with the spring sale, the prices realized at the fall auctions declined by the following percentages: Ten per cent in Australian red fox, otter, northern mink, and northwestern wolf; 20 per cent in blue fox, white fox, Russian sable, squirrel skins; 25 per cent in Australian opossum, cross fox, ermine, stone marten, civet cat, black bear, and Persian lamb; 30 per cent in red fox; 35 per cent in lynx and musquash; 40 per cent in beaver, fisher, skunk, raccoon, fitch, white hare, marmot, gray and kitt fox, house cat, nutria and Tibet lambs and crosses; 50 per cent in wallaby, wolverine, marten, American opossum, kolinsky, and wild cat.

He also states that—

> Spring prices were realized for silver fox, jackal, and American and Russian badger; but for kangaroo, chinchilla, mole, and Japanese fox there was practically no sale.[3]

TARIFF HISTORY 1883–1913.

Raw furs.—The language relating to furs undressed and fur skins undressed has been substantially the same in all tariff acts beginning with that of 1883. No duty was imposed by any of the acts.

[3] Commerce Reports, Dec. 7, 1920.

Dressed furs.—A duty of 20 per cent ad valorem was imposed by the act of 1883. No change was made in the rate until 1913, when it was increased to 30 per cent. In the acts of 1890, 1894, and 1897 dressed furs were restricted to "furs dressed on the skin, but not made up into articles." The act of 1909 substituted "not advanced further than dyeing but not repaired" for "not made up into articles." The wording of the 1913 act is the same as that of 1909 with the exception of "but not repaired" which, owing to the doubtful meaning of the word repaired, was omitted.

Hatters' fur.—The tariff act of 1883 provided for a 20 per cent ad valorem rate on hatters' fur not on the skin. The rate remained unchanged in all subsequent tariff acts until the act of 1913, which reduced the rate to 15 per cent.

The act of 1894 was the first to contain a specific provision relating to dressed furs suitable only for use in the manufacture of fur hats. This act placed them on the free list, but in all subsequent acts they were placed in the dutiable list at the same rate of duty as that on hatters' fur not on the skin.

Manufactures of fur.—The act of 1883 contained a separate paragraph relating to articles made of fur not specially enumerated or provided for, while the acts of 1890, 1894, and 1897 contained specific provisions for manufactures of fur; the provisions, however, were not given a separate paragraph. The act of 1909 increased the number of specific provisions relating to furs, but failed to provide specifically for manufactures of fur not provided for. The act of 1913, in addition to the articles enumerated, contains a provision for manufactures of fur not specially provided for. The rates of duty under the acts of 1883, 1890, 1894, 1897, and 1913, were, respectively, 30, 35, 30, 35, and 40 per cent ad valorem.

Manufactures of fur for use as material.—The act of 1909 was the first to provide specifically for this class of merchandise. The provision reads "manufactures of furs, further advanced than dressing and dyeing when prepared for use as material, including plates, lining, and crosses." The act of 1913 goes further than that of 1909 by distinguishing between plates and mats of dog and goat skins and those of other skins, the former being dutiable at 10 per cent and the latter at 40 per cent. The act of 1909 made all plates and mats dutiable at 35 per cent.

Wearing apparel.—It was not until the act of 1909 that specific provision was made for articles of wearing apparel composed of fur, previous to which they came under the general description of manufactures of fur. The rate of duty was 50 per cent ad valorem. The act of 1913 provided for two classes of wearing apparel, (1) those composed of the skins of cattle of the bovine species or of the dog or goat; and (2) those composed of fur not specially provided for. The rates under the 1913 act are 15 and 50 per cent, respectively.

COMPETITIVE CONDITIONS.

Raw skins are imported free of duty into all countries except Russia. This international free trade may be accounted for by the fact that furs of different countries are not directly competitive with each other. The furs of one country are in demand in another and vice versa. Furs are not only referred to by species but by region where obtained as well. As the quality of the fur varies greatly ac-

cording to the region where obtained, it may be said that furs of the same specie of animals are not competitive with each other. Fashion governs very largely the kinds of furs used without regard to the country of origin. Use of all kinds of furs has been very popular for the past few years.

Competition lies chiefly in marketing the furs. The Hudson's Bay Co. have for many years sold their furs at auction in London. In 1916 there was organized in New York a corporation to handle fur sales. Auction sales are held three times a year and consignments of furs are received from all parts of the world. There are auction sales of similar character conducted in St. Louis.

It has been generally recognized that the Europeans excel in the art of dressing and dyeing furs. England has long maintained its position as leader in this branch of the fur industry, notwithstanding many attempts to wrest the supremacy from her. The excellence of the English dyeing and dressing has been attributed to the peculiar property of the water and to secret processes and methods. Seal dyeing was largely in the control of one man, who practically enjoyed a monopoly. Until 1913 the United States Government's sealskins were sent to London to be dressed and dyed, but they are now treated and sold in St. Louis. The dyeing and dressing establishments at Leipzig and other centers in Germany were also noted for the excellence of their work.

The French influence upon the trade is primarily one of style and combination of colors. Many of the lower grade furs brought into this country were dressed and dyed abroad. All of the best sealine and seal dyed rabbit skins came from Germany, France, and Belgium. Although the American dressers and dyers were becoming more successful up to the time of the war, it was not until then that the great opportunity came to them to become the leaders in their industry. To-day American dyers and dressers are producing furs which are said to be unrivaled in color, sheen, suppleness. strength, and beauty. The rapid development in this country in the production of fur colors, which up to 1914 were imported from Germany, has been a material aid to dressers and dyers.

American fur dressers and dyers have stated at tariff hearings that they have found it impossible to compete with the cheaper foreign labor, especially with that employed on the poorer grades of furs. Domestic producers of hatters' fur have stated in the past that labor cost in Europe is from 45 to 52 per cent less than in the United States, that substantially all chemicals with which the fur is treated are cheaper abroad than here, and that they have been able to maintain the advantage over the foreigner only through quick deliveries and granting of liberal lines of credit.

Whether the American dressers and dyers will be able to maintain their leadership against their foreign competitors when conditions become settled in Europe remains to be seen. New competitors may enter the field, as it has been reported that the Swiss on account of the stagnation of the Leipzig fur market have started establishments for the treatment of furs.

TARIFF CONSIDERATIONS.

In 1917 when war-revenue taxation was under consideration it was proposed to place a duty of 10 per cent on all the articles in

the free list, including furs and fur skins undressed, and to increase the duty on the manufactured product by an equal amount. This met with opposition from the fur trade. It was maintained that demoralization would result from placing a duty on this raw material, which has been free for some time.

Paragraph 603, "skins of hares, rabbits, dogs, goats, and sheep, undressed," should be eliminated, as the provisions in paragraph 491, "furs and fur skins, undressed," and 604, "skins of all kinds, raw, and hides not specially provided for," cover the paragraph in question.

The act of 1913 contains no specific provision for sheepskin plates and mats. Such articles are subject to a duty of 40 per cent under paragraph 348 as against 10 per cent on plates and mats of dog and goat skins. Plates and mats of sheepskin are practically of the same quality and are used for similar purposes as those of dog and goat skins.

A strict interpretation of paragraph 348 would impose a duty of 30 per cent on dressed dog and goat skins, which apparently was not the intention of Congress in view of other provisions in the same paragraph, namely, 10 per cent on plates and mats of dog and goat skins and 15 per cent on wearing apparel composed of the skins of dogs and goats. There being no other provision in the tariff which includes them directly, they have been held dutiable at 10 per cent by similitude to plates and mats of dog and goat skins.

Questions have arisen whether dressed animal skins with the wool or hair on and intended for use as fur are within the terms "wools" or "hair," paragraphs 286, 304, and 650. It has been held that such skins, if for fur uses and if it is unprofitable to separate the wool or hair from the skin and use it for wool or hair purposes, are not within the terms "wools" or "hair," but are properly classifiable as "furs," which are not limited strictly to fur-bearing animals.

STATISTICAL TABLES.

Production in the United States. Furs dressed, summary.[1]

	Number of establishments.	Wage earners (average).	Primary horsepower.	Capital.[2]	Wages.[2]	Cost of materials.[2]	Value of products.[2]	Value added by manufacture.[2]
United States:								
1914	96	1,525	2,275	$2,490	$923	$906	$2,875	$1,969
1909	93	1,241	2,103	1,672	806	811	2,391	1,580
1904	85	1,105	1,260	1,296	755	1,642	3,216	1,574
1899	92	835	1,063	798	478	520	1,400	880
1889	26	400	353	267	239	203	651	448
1879	192	4,134	.....	3,599	1,389	5,338	8,239	2,901
1869	182	2,903	86	3,472	1,042	4,816	8,903	4,087
States, 1914:								
Colorado	3	5	13	14	4	2	11	9
Illinois	3	42	40	28	24	9	65	56
Minnesota	6	60	335	84	40	44	117	73
New Jersey	6	278	383	354	157	67	350	283
New York	52	974	1,234	1,640	596	604	1,945	1,341
Pennsylvania	5	43	28	92	32	83	146	63
All other States	21	123	242	278	70	97	241	144

[1] Data from the "Abstract of the Census of Manufacturers, 1914."
[2] Expressed in thousands.

Production in United States.

FURS, DRESSED—STATES.[1]

[Figures from Federal census.]

States.	Value.			
	1899	1904	1909	1914
Illinois	$39,850	$146,780	$129,659	$85,336
Minnesota	125,396	1,199,235	181,265	117,452
New Jersey	34,628	(2)	625,444	350,159
New York	777,227	1,400,052	1,239,725	1,945,004
Pennsylvania	22,500	(2)	(2)	145,638
Wisconsin	56,959	56,733	63,308	(2)
All other	344,395	412,901	131,558	251,447
Total	1,400,455	3,215,701	2,390,959	2,875,036

FURS, DRESSED—CITIES.

[Figures from Federal census.]

Cities.	Value.			
	1899	1904	1909	1914
New York City	$749,288	$1,400,052	$1,209,225	$1,945,004
All other	651,167	1,815,649	1,181,734	930,032
Total	1,400,455	3,215,701	2,390,959	2,875,036

FUR GOODS—SUMMARY.[3]

	Number of establishments.	Wage earners average.	Primary horsepower.	Capital.[4]	Wages.[4]	Cost of materials.[4]	Value of products.[4]	Value added by manufacture.[4]
United States:								
1914	1,322	9,030	3,233	$23,677	$6,335	$23,847	$43,633	$19,786
1909	1,241	11,927	2,120	29,249	7,788	31,777	55,938	24,161
1904	867	9,370	1,994	17,990	5,123	21,202	37,119	15,917
1899	734	7,758	907	12,484	3,927	14,281	25,899	11,618
1889	484	6,947	325	11,116	3,477	11,743	20,527	8,784
States, 1914:								
California	19	126	23	360	94	200	509	309
Colorado	6	14	1	35	10	10	45	35
Connecticut	10	25	9	99	12	39	92	53
District of Columbia	6	48	13	157	32	87	192	105
Illinois	84	300	141	1,087	219	870	1,605	735
Indiana	7	19	18	40	11	26	60	34
Iowa	17	124	176	309	82	186	437	251
Maryland	12	47	6	140	33	77	165	88
Massachusetts	17	208	49	523	146	476	862	386
Michigan	35	380	503	1,476	183	818	1,680	862
Minnesota	36	838	372	3,316	549	2,677	4,207	1,530
Missouri	7	106	57	313	47	93	231	138
Nebraska	9	82	61	148	43	129	294	165
New Jersey	14	76	153	199	42	80	183	103
New York	877	5,904	1,345	18,552	4,343	16,822	30,312	13,490
Ohio	25	136	41	322	100	149	423	294
Oregon	6	35	8	153	29	60	190	130
Pennsylvania	63	212	45	1,020	149	523	1,043	520
Utah	3	4	1	15	3	4	19	15
Washington	14	55	17	153	38	60	164	104
Wisconsin	36	225	140	1,075	129	368	711	343
All other States	19	66	54	185	41	93	209	116

[1] In addition to the products covered by the table dressed furs to the value of $8,850 were reported for 1914 by establishments assigned to other classifications.
[2] Included with "All other."
[3] Data from the "Abstract of the Census of Manufacturers, 1914."
[4] Expressed in thousands.

Production in United States—Continued.

FUR GOODS—STATES.[5]

[Figures from Federal census.]

States.	1899	1904	1909	1914
California	$1,138,295	$681,608	$301,910	$509,291
Illinois	2,456,580	1,431,858	1,929,470	1,604,873
Massachusetts	597,399	464,220	954,790	861,877
Michigan	1,806,004	1,771,435	2,283,576	1,679,920
Minnesota	2,196,031	3,378,731	3,775,970	4,207,468
New York	15,828,996	26,244,346	41,301,451	30,312,136
Pennsylvania	876,435	718,097	1,217,221	1,043,417
Wisconsin	913,754	909,350	1,523,000	710,526
All other	1,921,770	1,523,484	2,649,261	2,703,185
Total[6]	27,735,264	37,123,129	55,937,549	43,632,693

FUR GOODS—CITIES.

[Figures from Federal census.]

Cities.	1899	1904	1909	1914
Boston	$567,299	$464,220	(3)	$861,877
Chicago	2,409,693	1,420,558	$1,902,507	1,604,873
Detroit	1,352,243	1,120,797	1,737,783	1,101,568
Milwaukee	795,872	734,004	1,360,497	540,315
Minneapolis	263,252	462,073	510,610	565,811
New York	15,238,840	25,278,617	39,874,386	29,070,984
Philadelphia	752,285	677,197	1,031,564	793,630
St. Paul	1,802,193	2,791,092	3,109,872	3,508,830
San Francisco	1,132,045	668,608	(3)	398,825
All other	3,421,542	3,505,963	6,410,330	5,185,980
Total[7]	27,735,264	37,123,129	55,937,549	43,632,693

[3] Included with "All other."

[5] In addition to the products covered by the table fur goods to the value of $813,550 in 1914 and $532,781 in 1909 were reported by establishments assigned to other classifications.

[6] "Abstract of the Census of Manufacturers, 1914," shows totals for 1899 and 1904 as $25,899,000 and $39,119,000, respectively. The data in the abstract cover returns of factories only, whereas those in the main reports for these years cover returns of other establishments as well.

[7] "Abstract of the Census of Manufacturers, 1914," shows totals for 1899 and 1904 as $25,899,000 and $37,119,000, respectively. The data in the abstract cover returns of factories only, whereas those in the main reports for these years cover returns of other establishments as well.

Imports by countries, fiscal years.

FUR AND FUR SKINS UNDRESSED.

Imported from—	1910	1911	1912	1913	1914
Belgium	$1,357,478	$1,310,014	$1,289,032	$1,450,533	$524,493
France	892,396	892,067	854,324	931,624	339,676
Germany	6,327,794	5,764,708	6,968,577	5,641,081	2,697,794
Russia in Europe	314,001	802,339	1,168,198	834,870	171,237
England	3,239,538	3,332,298	3,606,347	3,610,769	1,982,593
Canada	2,036,706	1,737,703	2,267,807	2,197,509	1,981,637
China	254,106	103,408	71,298	175,770	58,915
Australia	740,434	725,816	547,997	878,033	356,933
Argentina	21,165	10,239	11,768	5,214	8,667
Japan	27,583	95,822	43,292	21,389	80,943
Russia in Asia	49,808	57,249	35,837	98,312	125,383
All other	328,249	519,338	474,421	872,104	512,050
Total	15,589,258	15,351,001	17,339,198	16,717,208	8,840,321

Imports by countries, fiscal years—Continued.

FUR AND FUR SKINS UNDRESSED—Continued.

Imported from—	1915	1916	1917	1918
Belgium	$348,722	$2,956		
France	401,174	1,451,845	$1,629,827	$2,680,226
Germany	1,097,510	418,030		
Russia in Europe	115,787	863,007	1,552,234	2,900,180
England	2,580,446	6,197,517	7,584,250	8,559,533
Canada	1,762,269	4,183,962	5,264,237	8,269,943
China	37,680	134,396	618,247	1,641,974
Australia	452,374	1,190,555	1,953,939	5,417,669
Argentina	222,439	1,040,793	1,145,884	2,684,899
Japan	16,668	235,506	721,689	1,712,511
Russia in Asia	147,567	71,149	176,418	253,789
All other	585,712	1,101,953	906,650	1,558,830
Total	7,768,348	16,891,699	21,553,375	35,679,554

Imported from—	1919		1920	
	Number.	Value.	Number.	Value.
Belgium	156,465	$52,439		
France	10,325,668	2,560,213	12,648,708	$4,203,782
Germany				
Russia in Europe	12,941	15,285	230,818	428,962
England	[1]36,216,846	[1]8,721,229	41,555,154	20,883,142
Canada	12,723,124	13,464,381	3,035,230	15,940,194
China	2,852,807	3,042,508	6,155,843	9,706,620
Australia	31,014,590	4,110,981	59,469,550	17,978,588
Argentina	1,134,803	890,427	4,231,499	4,769,715
Japan	1,582,561	1,830,095	3,587,689	8,098,729
Russia in Asia	1,941,162	1,464,281	6,676,451	6,460,057
New Zealand				
All other	5,853,940	1,813,874	28,250,493	15,302,255
Total	103,814,907	37,965,713	165,841,435	103,772,044

Imported from—	July 1 to Dec. 31, 1920.		Calendar year 1920.	
	Number.	Value.	Number.	Value.
Belgium				
France	4,052,133	$841,024	11,620,078	$3,397,765
Germany				
Russia in Europe	52,448	147,567	59,571	211,156
England	4,731,386	2,544,649	30,296,861	16,933,679
Canada	730,505	2,806,099	2,663,387	13,096,720
China	1,769,370	3,448,151	5,220,872	10,566,781
Australia	10,347,115	3,089,343	42,105,313	12,196,461
Argentina	424,582	435,172	1,999,002	2,099,874
Japan	331,502	1,108,692	1,491,897	5,307,387
Russia in Asia	587,540	1,084,944	3,814,768	4,553,471
New Zealand	1,187,499	428,737	5,544,408	2,313,823
All other	9,157,081	5,140,293	25,560,840	13,750,475
Total	33,371,161	21,074,671	130,376,997	84,427,592

FURS, DRESSED, AND MANUFACTURES OF.[2]

Imported from—	1910	Imported from—	1910
Belgium	$1,718,294	Canada	$65,759
France	4,189,226	Chinese Empire	329,843
Germany	2,987,453	All other	185,773
Russia in Europe	51,036		
England	1,481,902	Total	11,008,386

[1] United Kingdom.

[2] Stated separately as "Furs, dressed on the skin" and "manufactures of," after 1910. Includes fur hats, bonnets, and hoods.

Imports by countries, fiscal years—Continued.

FURS DRESSED ON THE SKIN.[1]

Imported from—	1911	1912	1913	1914
Belgium	$1,356,098	$1,167,370	$924,519	$553,019
France	1,603,525	1,620,216	1,584,488	647,538
Germany	1,592,173	1,896,629	2,057,222	1,206,587
England	534,394	511,309	603,646	250,018
Canada	33,476	37,212	35,563	28,985
China	122,173	78,220	156,539	487,001
Russia in Europe	17,650	6,820	14,841	14,847
All other	22,495	28,026	18,960	16,256
Total	5,281,984	5,345,802	5,395,778	3,204,251

Imported from—	1915	1916	1917	1918
Belgium	$299,157	$17,666	.....	.....
France	364,019	687,740	$899,479	$164,103
Germany	337,862	199,541	13	.....
England	128,779	455,101	606,231	175,063
Canada	30,334	120,146	34,797	41,009
China	330,520	581,733	945,092	674,925
Russia in Europe	1,895	15,960	390,967	114,616
All other	91,135	75,513	108,549	51,634
Total	1,583,701	2,153,400	2,985,128	1,221,350

Imported from—	1919		1920		1921	
	Number.	Value.	Number.	Value.	Number.	Value.
France	461,816	$470,552	.....	.....	.....	.....
England	[2] 104,013	[2] 215,667	.....	.....	.....	.....
Canada	28,339	44,108	.....	.....	.....	.....
China	25,501	51,548	.....	.....	.....	.....
All other	366	1,186	.....	.....	.....	.....
Total	620,035	783,061	4,111,504	$6,528,733	1,639,412	$1,311,650

ALL OTHER MANUFACTURES OF FURS, INCLUDING WASTE.[1]

Imported from—	1911[2]	1912	1913	1914	1915	1916
Austria-Hungary	$90,666	$20,063	$17,088	$20,959	$9,606	.....
Belgium	297,215	168,152	85,479	222,679	119,253	$2,106
France	1,106,381	1,063,852	722,636	655,489	266,468	374,792
Germany	656,331	569,227	622,269	394,370	157,060	75,901
England	559,653	160,595	208,446	221,372	144,002	123,313
Canada	40,944	44,925	44,022	21,330	17,282	31,447
China	143,659	191,647	262,305	227,633	44,505	92,150
All other	91,114	92,823	26,334	27,242	42,776	41,361
Total	2,985,963	2,301,284	1,988,579	1,791,074	800,952	741,070

Imported from—	1917	1918	1919	1920	1921
France	$921,599	$702,303	$325,058	.....	.....
England	117,634	95,768	[2] 149,788	.....	.....
Canada	22,112	69,322	146,727	.....	.....
China	99,515	104,701	964,630	.....	.....
All other	27,747	38,338	108,621	.....	.....
Total	1,188,607	1,010,432	1,694,824	$4,913,448	$1,997,305

[1] Included in "Furs, dressed and manufactures of" prior to 1911.
[2] United Kingdom.
[3] Includes "Hats, bonnets, and hoods."

Imports for consumption—Revenue.

FURS AND FUR SKINS, UNDRESSED, SEALSKINS, RAW.

Fiscal year:	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Number.				*Per cent.*
1907	Free	1,679	$31,969		$19.04	
1908	do	1,400	15,090		10.78	
1909	do	778	6,805		8.75	
1910	do	1,942	58,896		30.33	
1911	do	824	12,460		15.12	
1912	do	1,376	26,730		19.43	
1913	do	6,676	10,109		1.51	
1914	do	9,258	15,838		1.71	
1915	do	1,495	3,503		2.34	
1916	do	29,329	50,152		1.71	
1917	do	1,869	37,020		19.81	
1918	do	544	26,192		48.15	
1919	do	8,296	70,490		8.50	
1920	do	15,706	513,184		32.67	
1918 [1]	do	7,932	86,535		10.90	
1919 [1]	do	4,664	43,765		9.38	
1920 [1]	do	28,322	598,883		21.14	
1921 [7]	do	1,606	27,078			

FURS AND FUR SKINS, UNDRESSED, OTHER THAN SEAL.[2]

1907	Free		$12,872,393			
1908	do		9,577,889			
1909	do		11,645,814			
1910	do		15,532,440			
1911	do		15,321,915			
1912	do		17,377,992			
1913	do		16,758,569			
1914	do		8,763,431			
1915	do		5,073,126			
1916	do		11,940,863			
1917	do		14,628,905			
1918	do		23,727,914			
1919	do	6,803,695	9,431,550		$1.38	
1920	do	15,286,080	32,438,007		2.13	
1918 [1]	do		17,565,588			
1919 [1]	do	11,634,223	20,476,897		1.76	
1920 [1]	do	12,046,138	27,020,176		2.24	
1921 [7]	do	4,993,407	6,800,938			

FURS AND FUR SKINS, UNDRESSED—HARE AND RABBIT.[3]

1914 [4]	Free	8,949,809	$2,741,109		$9.306	
1915	do		2,692,058			
1916	do		4,884,670			
1917	do		6,881,833			
1918	do		11,225,447			
		Number.				
1919	do	85,806,640	12,225,447		.142	
1920	do	119,576,247	28,091,979		.234	
1918 [1]	do		11,250,173			
1919 [1]	do	114,818,707	19,439,835		.169	
1920 [1]	do	82,735,480	23,526,660		.284	
1921 [7]	do	22,682,455	2,658,428			

FURS AND FUR SKINS, UNDRESSED—BEAVER.[5]

1919	Free	180,486	$2,911,745		$16.13	
1920	do	207,341	4,330,397		20.98	
1918 [6]	do	42,965	452,355		10.52	
1919 [1]	do	264,430	4,269,648		16.14	
1920 [1]	do	125,216	3,436,399		27.44	
1921 [7]	do	128,884	2,254,125			

[1] Calendar year.
[2] 1919 and after, beaver, fox, marten, mink, mole, muskrat, and squirrel reported separately; 1914 and after, hare and rabbit skins reported separately.
[3] Included with "Fur and fur skins, undressed, other," previous to 1914.
[4] New law, Oct. 4, 1913, to June 30, 1914.
[5] Included in "All other" previous to 1919 (fiscal).
[6] July 1 to Dec. 31, 1918.
[7] Six months ended June 30, 1921.

Imports for consumption—Revenue—Continued.

FURS AND FUR SKINS, UNDRESSED—FOX.[5]

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Number.				*Per cent.*
1919	Free	443,968	$4,747,968		$10.69	
1920	do	1,064,903	12,531,814		11.76	
1918 [6]	do	148,116	1,155,808		7.80	
1919 [1]	do	916,874	10,709,178		10.70	
1920 [1]	do	596,561	7,251,897		12.15	
1921 [7]	do	122,599	1,586,390			

FURS AND FUR SKINS, UNDRESSED—MINK.[5]

1919	Free	331,583	$808,916		$2.44	
1920	do	611,516	3,653,250		5.97	
1918 [6]	do	111,784	153,602		1.37	
1919 [1]	do	312,169	1,212,897		3.88	
1920 [1]	do	560,768	3,403,158		6.06	
1921 [7]	do	185,915	834,314			

FURS AND FUR SKINS, UNDRESSED—MARTEN.[5]

1919	Free	131,438	$2,069,619		$15.75	
1920	do	294,542	5,369,899		18.23	
1918 [6]	do	30,306	244,815		8.07	
1919 [1]	do	181,136	3,388,823		18.70	
1920 [1]	do	264,675	4,763,531		17.99	
1921 [7]	do	221,902	2,796,982			

FURS AND FUR SKINS, UNDRESSED—MOLE.[5]

1919	Free	4,473,277	$1,057,211		$0.236	
1920	do	18,318,364	6,381,250		.348	
1918 [6]	do	199,693	43,131		.215	
1919 [1]	do	6,244,093	1,598,106		.255	
1920 [1]	do	17,407,900	6,119,346		.351	
1921 [7]	do	3,114,837	381,491			

FURS AND FUR SKINS, UNDRESSED—MUSKRAT.[5]

1919	Free	1,689,089	$2,152,539		$1.27	
1920	do	1,093,368	3,179,318		2.90	
1918 [6]	do	685,633	722,079		1.05	
1919 [1]	do	1,563,971	2,718,138		1.73	
1920 [1]	do	849,145	2,594,845		3.05	
1921 [7]	do	1,042,325	1,355,767			

FURS AND FUR SKINS, UNDRESSED—SQUIRREL.[5]

1919	Free	4,044,044	$2,484,486		$0.614	
1920	do	9,369,561	7,275,605		.776	
1918 [6]	do	790,798	403,096		.509	
1919 [1]	do	8,314,755	5,432,592		.653	
1920 [1]	do	5,756,333	5,675,323		.985	
1921 [7]	do	2,265,104	1,551,054			

[1] Calendar year.
[5] Included in "All other" previous to 1919 (fiscal).
[6] July 1 to Dec. 31, 1918.
[7] 6 months ended June 30, 1921.

Imports for consumption—Revenue—Continued.

FURS DRESSED ON THE SKIN NOT ADVANCED FURTHER THAN DYEING—SEAL.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Number.				*Per cent.*
1907 [7]	20 per cent	16,781	$514,467	$102,893	$30.66	20
1908 [7]	do	6,418	196,517	29,303	30.62	20
1909 [7]	do	23,041	711,523	142,305	30.88	20
1910	do	13,629	348,959	69,792	25.60	20
1911	do	7,128	260,239	52,048	36.51	20
1912	do	12,380	375,739	75,148	20.35	20
1913	do	9,062	255,488	51,098	28.19	20
1914 [8]	do	3,019	88,892	17,774	29.44	20
1914 [4]	30 per cent	2,737	42,038	12,611	15.36	30
1915	do	748	9,501	2,850	12.70	30
1916	do	3,020	27,319	8,196	9.04	30
1917	do	1,283	19,224	5,767	14.98	30
1918	do	1,333	8,956	2,687	6.72	30
1919	do	16,484	26,875	8,062	1.63	30
1920	do	3,811	63,732	19,120	16.72	30
1919 [1]	do	1,891	48,220	14,466	25.49	30
1920 [1]	do	2,509	30,678	9,203	12.22	30
1921 [2]	do	2,503	4,002	1,200		30

FURS DRESSED ON THE SKIN, NOT ADVANCED FURTHER THAN DYEING, OTHER THAN SEAL.

1907 [7]	20 per cent		$6,312,125	$1,262,425		20
1908 [7]	do		4,264,995	852,999		20
1909	do		[9] 6,539,499	1,307,900		20
1910	do		[9] 5,559,193	1,111,839		20
1911	do		[9] 4,770,423	954,080		20
1912	do		4,790,573	958,115		20
1913	do		4,826,056	965,211		20
1914	do		1,842,536	368,507		20
	30 per cent		[9] 1,325,682	397,705		30
1915	do		1,202,346	360,704		30
1916	do		1,657,673	497,302		30
1917	do		1,889,320	566,796		30
1918	do		553,242	165,972		30
1919	do	632,693	645,321	193,599	$1.02	30
1920	do	3,418,926	4,977,451	1,493,235	1.45	30
1918 [1]	do		413,585	124,075		30
1919 [1]	do	2,276,750	3,063,406	919,021	1.34	30
1920 [1]	do	1,957,095	3,050,295	915,088	1.56	30
1921 [2]	do	832,302	574,807	172,440		30

PLATES AND MATS OF DOG AND GOAT SKINS.

1914 [4]	10 per cent		$280,855	$28,085		10
1915	do		297,824	29,782		10
1916	do		495,429	49,543		10
1917	do		986,550	98,655		10
1918	do		581,982	58,198		10
1919	do	766,115	1,029,852	102,985	$1.34	10
1920	do	683,761	1,359,763	135,976	1.98	10
1918 [1]	do		616,150	61,615		10
1919 [1]	do	922,956	1,422,424	142,242	1.54	10
1920 [1]	do	495,371	1,021,534	102,153	2.07	10
1921 [2]	do	261,824	395,855	39,585		10

MANUFACTURES OF FURS, N. S. P. F.

1907	35 per cent		[10] $406,107	$142,137		35
1908	do		[10] 387,655	135,679		35
1909	do		[10] 368,713	129,050		
1910 [11]	do		1,708	598		

[1] Calendar year.
[2] 6 months ended June 30, 1921.
[4] New law, Oct. 4, 1913, to June 30, 1914.
[7] Furs dressed on the skin, but not made up into articles.
[8] Old law, July 1 to Oct. 3, 1913.
Excludes small amounts imported from Philippine Islands, for use of foreign ministers, and under reciprocity with Cuba.
[10] Excludes small amount imported from Cuba under reciprocity treaty.
[11] July 1 to Aug. 5, 1909, under act of 1897.

Imports for consumption—Revenue—Continued.

MANUFACTURES OF FURS FURTHER ADVANCED THAN DRESSING AND DYEING WHEN PREPARED FOR USE AS MATERIAL, INCLUDING PLATES, LINING, AND CROSSES—SEAL.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Number.				*Per cent.*
1910	35 per cent [12]		$233,210	$81,623		35
1911	35 per cent		75,338	26,368		35
1912 [2]	None shown					
1913	35 per cent		240	84		35
1914	35 per cent [4]		8	3		35
	40 per cent [4]		1,013	405		40
1915	40 per cent		1,313	525		40
1916	do		1,099	440		40
1917	None shown					
1918	40 per cent		1,636	655		40
1919	do		83	33		40
1920	do		60	24		40
1918 [1]	do		1,621	648		40
1919 [1]	do		78	31		40
1920 [1]	do		32	9		40
1921 [2]	do		2,142	856		40

MANUFACTURES OF FURS FURTHER ADVANCED THAN DRESSING AND DYEING WHEN PREPARED FOR USE AS MATERIAL, INCLUDING PLATES, LINING, AND CROSSES AND ARTICLES MADE FROM FUR, N. S. P. F., OTHER THAN SEAL.

1910	35 per cent [12]		$1,698,340	$594,419		35
1911	35 per cent [3]		1,133,628	396,770		35
1912	do		794,263	277,992		35
1913	do		936,506	327,777		35
1914	35 per cent		237,443	83,105		35
	40 per cent [4]		249,742	99,897		40
1915	40 per cent		237,550	95,020		40
1916	do		270,032	108,013		40
1917	do		277,391	110,956		40
1918	do		101,797	40,719		40
1919	do		50,265	20,106		40
1920	do		391,787	156,715		40
1918 [1]	do		70,206	28,082		40
1919 [1]	do		182,136	72,854		40
1920 [1]	do		315,122	126,048		40
1921 [2]	do		171,929	68,768		

WEARING APPAREL OF EVERY DESCRIPTION, PARTLY OR WHOLLY MANUFACTURED, COMPOSED OF OR OF WHICH FUR IS THE COMPONENT MATERIAL OF CHIEF VALUE.

1910 [13]	50 per cent		[13] $315,809	$157,904		50
1911	do		472,939	236,470		50
1912	do		325,832	162,916		50
1913	do		392,188	196,094		50

WEARING APPAREL OF EVERY DESCRIPTION, PARTLY OR WHOLLY MANUFACTURED, COMPOSED OR IN CHIEF VALUE OF HIDES OR SKINS OF CATTLE, DOG, OR GOAT.

1914 [14]	15 per cent		$180	$27		15
1915	do		299	45		15
1916	do		1,594	239		15
1917	do		5,068	760		15
1918	do		19,575	2,936		15
1919	do		85	13		15
1920	do		1,447	217		15
1918 [1]	do		19,591	2,938		15
1919 [1]	do		1,273	190		15
1920 [1]	do		416	62		15
1921 [2]	do		156	23		15

[1] Calendar year.
[2] Six months ended June 30, 1921.
[3] New law, Oct. 4, 1913, to June 30, 1914.
[4] Old law, July 1 to Oct. 3, 1913.
[12] Aug. 6, 1909, to June 30, 1910, under act of 1909.
[13] Excludes small amount imported from Cuba.
[14] Oct. 1, 1913, to June 30, 1914.

Imports for consumption—Revenue—Continued.

WEARING APPAREL, OF EVERY DESCRIPTION, PARTLY OR WHOLLY MANUFACTURED, COMPOSED OR IN CHIEF VALUE OF FUR, N. S. P. F.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Number.				*Per cent.*
1914 [15]	50 per cent		$344,507	$172,253		50
1915	do		110,974	55,487		50
1916	do		75,917	37,958		50
1917	do		123,355	61,678		50
1918	do		100,192	50,096		50
1919	do		13,599	6,799		50
1920	do		94,240	47,120		50
1918 [1]	do		14,692	7,346		50
1919 [1]	do		85,476	42,738		50
1920 [1]	do		124,238	62,119		50
1921 [2]	do		29,328	14,664		50

FURS NOT ON THE SKIN, PREPARED FOR HATTERS' USE, INCLUDING FUR SKINS, CARROTED.

		Pounds.				
1907	20 per cent		$897,401	$179,480		20
1908	do		729,516	145,903		20
1909	do		923,088	184,617		20
1910	do		1,499,815	299,963		20
1911	do		599,390	119,878		20
1912	do		959,300	191,860		20
1913	do		472,304	94,461		20
1914	20 per cent [3]		108,052	21,610		20
	15 per cent [4]		499,202	74,880		15
1915	15 per cent		352,705	52,906		15
1916	do		293,056	43,958		15
1917	do		640,534	96,080		15
1918	do		475,507	71,326		15
	15 to 20 per cent [16]		10,778	1,293		12
1919	15 per cent	80,422	228,721	34,308	$2.84	15
1920	do	398,286	1,565,000	234,750	3.92	15
1918 [1]	do		446,242	66,936		15
1919 [1]	do	138,913	496,559	74,483	3.57	15
1920 [1]	do	341,257	1,387,420	208,113	4.06	15
1921 [2]	do	196,459	262,562	39,384		15

FUR WASTE.

1907	10 per cent		$231,459	$23,146		10
1908	do		190,449	19,045		10
1909	do		255,255	25,526		10
1910	do		208,278	20,828		10
1911	do		152,825	15,282		10
1912	do		114,238	11,424		10
1913	do		105,896	10,590		10
1914	do		78,580	7,858		10
1915	do		40,545	4,054		10
1916	do		61,667	6,167		10
1917	do		63,112	6,311		10
1918	do		84,501	8,450		10
1919	do	1,121,958	134,425	13,442	$0.120	10
1920	do	645,087	167,205	16,720	.259	10
1918 [1]	do		166,970	16,697		10
1919 [1]	do	541,773	79,060	7,906	.146	10
1920 [1]	do	708,910	168,510	16,851	.237	10
1921 [2]	do	56,648	17,383	1,738		

[1] Calendar year.
[2] Six months ended June 30, 1921.
[4] New law, Oct. 4, 1913, to June 30, 1914.
[3] Old law, July 1 to Oct. 3, 1913.
[15] Excludes small amount imported for use of foreign ministers or from the Philippine Islands.
[16] Reciprocity with Cuba.

Domestic exports, fiscal years.

FURS AND FUR SKINS.[1]

Exported to—	1910	1911
France	$1,102,749	$613,631
Germany	4,879,032	2,239,011
England	5,535,428	5,434,210
Canada	2,780,128	1,950,713
All other	204,298	235,952
Total	14,501,635	10,473,517

FURS AND FUR SKINS, RAW OR UNMANUFACTURED.[2]

Exported to—	1912	Exported to—	1912
Belgium	$107,574	Canada	$2,260,475
France	833,495	All other	48,500
Germany	4,946,088	Total	14,360,008
England	6,163,867		

FURS AND FUR SKINS, RAW OR UNMANUFACTURED—SEALSKINS.[3]

Exported to—	1913		1914		1915	
	Number.	*Dollars.*	*Number.*	*Dollars.*	*Number.*	*Dollars.*
England	3,837	188,700	1,343	37,199		
Canada					8	405
Total	3,837	188,700	1,343	37,199	8	405

Exported to—	1916		1917		1918	
	Number.	*Dollars.*	*Number.*	*Dollars.*	*Number.*	*Dollars.*
England						
Canada	30	600				
Total	30	600				

FURS AND FUR SKINS, RAW OR UNMANUFACTURED—OTHER THAN SEALSKINS.[4]

Exported to—	1913	1914	1915	1916	1917	1918
Belgium	$117,100	$60,543				
France	1,054,228	938,333	$56,353	$501,797	$1,695,558	$536,640
Germany	6,184,160	4,291,869	105,983			
England	7,117,936	7,721,921	1,403,609	4,373,127	6,594,532	7,866,242
Canada	2,767,546	1,023,610	818,424	1,673,939	1,855,874	2,099,925
Sweden			47,251	84,797	124,720	97,666
All other	35,233	25,072	108,899	218,813	219,754	199,059
Total	17,276,203	14,061,348	2,540,519	6,852,473	10,490,438	10,799,532

[1] Stated separately as "Raw" and "Dressed, etc.," after 1911.
[2] Stated separately as "Sealskins" and "All other" after 1912.
[3] Not separately stated prior to 1913.
[4] Included under "Fur and fur skins" prior to 1912, and under "Fur and fur skins, raw or unmanufactured," in 1912.

Domestic exports, fiscal years—Continued.

FURS AND FUR SKINS, RAW OR UNMANUFACTURED.

Exported to—	1919	1920	July 1 to Dec. 31, 1920.	Calendar year, 1920.
France	$1,262,768	$4,359,017	$382,377	$3,545,474
England	4,775,668	15,775,597	1,878,614	13,807,582
Canada	3,456,108	7,568,973	845,666	6,188,406
Sweden	463,309			
All other	317,469	2,433,753	828,091	2,731,845
Total	10,275,342	30,137,340	3,934,748	26,273,307

First 6 months calendar year 1921, total, $6,348,379.

FURS AND FUR SKINS, DRESSED, AND MANUFACTURES OF.[5]

Exported to—	1912	1913	1914	1915	1916	1917
France	$13,727	$10,658	$100,555	$201,787	$538,989	$1,606,011
Germany	68,892	72,576	76,668	1,935		
England	32,334	68,672	50,997	528,145	936,855	1,913,053
Canada	310,356	628,031	422,790	286,304	445,761	902,975
Mexico	60,530	30,865	42,889	27,778	58,207	103,252
Cuba	24,493	21,655	18,524	20,581	21,974	39,098
Australia	30,757	14,225	15,558	37,358	14,460	16,412
Argentina		195	157	32,813	47,436	74,909
All other	74,352	77,806	92,706	116,834	372,031	583,012
Total	615,441	924,683	870,824	1,253,535	2,435,713	5,238,722

Exported to—	1918	1919	1920	July 1 to Dec. 31, 1920.	Calendar year 1920.
France	$815,306	$1,487,747	$4,011,338	$691,459	$2,944,529
England	847,836	383,021	1,714,853	308,039	1,145,739
Canada	874,023	869,604	1,448,180	484,307	1,257,964
Mexico	53,041				
Cuba	16,477				
Australia	36,129				
Argentina	221,449	318,977	436,857	135,803	472,292
Norway					68
Denmark				12,450	66,682
All other	239,838	1,277,324	1,134,529	322,184	726,414
Total	3,104,099	4,336,673	8,745,757	1,954,242	6,613,688

[5] Included in "Furs and fur skins" prior to 1912.

Total for first 6 months of calendar year 1921, $771,506.

Exports of foreign merchandise, by countries, fiscal years.

FURS, AND MANUFACTURES OF, EXCEPT FUR HATS.

Exported to—	1910		1911		
	Furs and fur skins, undressed.	Furs, dressed, and manufactures of.	Furs and fur skins, undressed.	Furs, dressed on the skin.	Manufactures of furs, including waste.
Belgium	$5,202			$1,908	$1,180
France	60,719	$15,373	$343,738	22,273	19,053
Germany	197,922	95,392	186,792	141,735	92,075
England	70,871	26,664	35,418	15,432	14,827
Canada	224,867	127,861	216,227	43,332	82,725
All other	27,556	552	2,750	1,694	1,760
Total	587,137	265,842	784,925	226,374	211,620

Exports of foreign merchandise, by countries, fiscal years—Continued.

FURS, AND MANUFACTURES OF, EXCEPT FUR HATS—Continued.

Exported to—	1912			1913		
	Furs and fur skins, undressed.	Furs, dressed on the skin.	Manufacture of furs, including waste.	Furs and fur skins, undressed.	Furs, dressed on the skin.	Manufactures of furs, including waste.
Belgium	$15,498	$11,572	$1,663	$14,282	$21,592	$714
France	241,216	9,721	2,377	112,694	15,255	655
Germany	203,553	70,346	21,843	138,815	83,677	15,556
England	89,257	31,876	4,724	254,794	21,536	7,999
Canada	362,154	81,729	86,678	720,958	53,844	86,109
All other	4,952	1,470	.....	1,936	2,951	372
Total	916,630	206,714	117,285	1,243,479	198,855	111,405

Exported to—	1914			1915		
	Furs and fur skins, undressed.	Furs, dressed on the skin.	Manufactures of furs, including waste.	Furs and fur skins, undressed.	Furs, dressed on the skin.	Manufactures of furs, including waste.
Belgium	$897	$6,781	.....	.....	$969	.....
France	94,992	53,874	$5,198	$26,258	5,237	.....
Germany	189,008	97,307	22,003	5,719	9,568	$3,941
England	61,536	40,492	12,329	19,788	147,751	2,644
Canada	209,583	14,667	55,353	225,479	70,596	45,008
All other	1,817	5,427	864	2,700	8,081	60
Total	557,833	218,548	95,747	279,944	242,202	51,653

Exported to—	1916			1917		
	Furs and fur skins, undressed.	Furs dressed on the skin.	Manufactures of, including waste.	Furs and fur skins, undressed.	Furs dressed on the skin.	Manufactures of, including waste.
France	$1,400	$1,213	$558	$7,700	$2,692	$3,923
England	66,254	16,987	26,442	26,463	23,404	1,151
Canada	472,937	61,367	94,103	496,586	97,458	81,822
All other	2,740	4,773	1,752	.....	4,080	552
Total	543,331	84,340	122,855	530,749	127,634	87,448

Exported to—	1918			1919		
	Furs and fur skins, undressed.	Furs dressed on the skin.	Manufactures of, including waste.	Furs and fur skins, undressed.	Furs dressed on the skin.	Manufactures of, including waste.
France	$2,000	$10,825	$80	.....	.....	.....
England	61,550	7,000	.....	.....	.....	.....
Canada	628,817	112,309	122,830	.....	.....	.....
All other	2,523	20,477	.....	.....	.....	.....
Total	694,890	150,611	122,910	$148,448	$525	$18,962

1920:

Furs and fur skins, undressed	$261,031
Furs dressed on the skin	19,289
Manufactures of fur, including waste	14,071

Exports of foreign merchandise, by countries, fiscal years—Continued.

FURS—PRICES PER PELT AS OF JANUARY OF EACH YEAR QUOTED.

[Data from War Industries Board, Price Bulletin No. 27.]

Kinds or grades.	1913	1914	1915	1916	1917	1918
Mink	$3.00	$2.00	$2.50	$2.25	$3.75	$4.00
Raccoon	1.30	1.00	1.70	2.00	2.50	3.50
Skunk	3.00	1.75	2.75	3.00	3.50	4.75
Muskrat	.25	.18	.25	.40	.60	1.30
Opossum	.65	.40	.60	.60	1.00	1.10
Beaver	6.75	4.75	3.75	7.48	14.00	16.60
Ermine	.70	.60	.65	.72	1.10	1.18
Lynx	15.50	9.25	5.75	8.53	19.00	26.75
Marten	6.10	4.00	6.25	5.14	15.60	21.00
Persians	.....	.....	3.25	3.10	5.20	.....
Silver fox	.....	.....	175.00	133.00	154.00	160.00
Rabbit skins	.....	.....	.....	.....	.....	.34
Russian sable	.....	.....	45.00	55.00	60.00	80.00
Mole	.....	.....	.....	.....	.26	.08

LONDON FUR SALES.

The following statement shows the number of furs sold at public auction by Lampson & Co., London, England, during 1918 and 1919: [4]

Kinds of furs.	Number of skins sold.		Kinds of furs.	Number of skins sold.	
	1918	1919		1918	1919
Bear	9,521	15,351	Lamb	41,636	21,703
Beaver	11,205	5,587	Mink	54,974	60,664
Cat:			Mole	566,442	1,629,723
Civet	110,658	129,968	Moufflon	39,164	36,266
House	18,899	35,934	Musquash	1,421,148	359,761
Wild	18,721	9,512	Nutria	132,907	134,719
Ermine	33,954	108,031	Opossum:		
Fitch	33,375	22,694	American	775,809	893,469
Fox:			Australian	75,978	196,947
Gray	6,052	12,296	Ringtail	46,538	8,588
Kitt	5,550	11,153	Raccoon	85,320	49,208
Red	10,990	37,904	Skunk	769,583	918,783
Silver	2,010	3,517	Squirrel	288,555	649,386
White	5,252	5,424	Wallaby	265,809	137,306
Hare, white	206,027	107,743	Wolf	20,292	30,195
Kolinsky	19,026	39,828			

Kinds of fur.	Number of skins sold.			
	Total, 1919.	May, 1920.	October, 1920.	Total, 1920.
Raccoon	49,208	9,723	18,228	35,968
Musquash	359,761	98,320	213,348	410,702
Skunk	918,783	245,915	172,143	706,851
Mink	60,664	9,098	12,249	48,696
Fox:				
Red	37,904	70,379	30,270	121,719
Gray	12,296	3,163	6,544	18,735
Kitt	11,153	158	217	24,173
White	5,424	2,212	4,669	10,792
Australian red	10,310	18,366	64,007	112,150
Lynx	959	37	176	600
Fisher	1,799	150	162	1,042
Beaver	5,587	712	778	2,209
Bear	15,351	1,734	2,290	5,451
Wolf	30,195	9,868	14,965	38,165
Marten, stone	5,548	6,221	3,404	11,803
Fitch	22,694	11,237	6,533	29,926
Ermine	108,031	54,158	30,012	107,539
Squirrel	649,386	35,643	112,505	257,555
Chinchilla	4,071	1,267	284	2,532
Mole	1,629,723	971,924	151,448	1,686,690
Hare, white	100,743	27,253	145,141	255,842
Lamb, etc	21,703	8,393	13,694	28,482
Moufflon	36,266	529	529	5,412
Opossum:				
American	893,469	245,765	281,180	703,853
Australian	196,947	18,235	40,342	71,588
Ringtail	8,588	6,949	10,678	20,477
Wallaby	137,306	45,240	27,171	131,304
Nutria	134,719	18,096	5,195	54,396

[4] Commerce Reports Nos. 230-306.

Estimate of the average annual fur production of North America, estimated by E. Brass on the basis of production for the three years, 1907–1909.

[Commission of Conservation, Canada: Fur Farming in Canada, 1914, p. 186.]

Kind of fur:	Skins.
Lynx or wildcat	90,000
House cat	80,000
Timber wolf	8,000
Prairie wolf	40,000
Red fox	200,000
Silver fox	4,000
Cross fox	15,000
White fox	30,000
Blue fox	6,000
Gray fox	50,000
Kit fox	4,000
Hudson Bay marten	120,000
Fisher	10,000
Mink	60,000
Weasel (ermine)	400,000
Wolverene	3,000
Badger	30,000
Skunk	1,500,000
Civet cat (small skunk)	100,000
Otter	30,000
Raccoon	600,000
White bear	400
Black bear	20,000
Brown bear	3,000
Grizzly bear	1,200
Marmot	30,000
Beaver	80,000
Muskrat or musquash	8,000,000
Opossum	1,000,000
Hare	200,000
Musk ox	500
Average production valued at approximately	$24,000,000

Production in Canada.[1]

HATS, CAPS, AND FURS—COMPARATIVE STATISTICS FOR 1910 AND 1915.

Items.	1910	1915
Number of establishments	139	115
Capital	$10,653,627	$6,551,127
Salaries and wages	$2,244,170	$2,001,993
Cost of material	$6,329,698	$4,002,626
Value of products	$11,155,103	$7,326,880

FURS, AND MANUFACTURES OF.[2]

Industry.	Establishments.	Capital.	Employees on wages.	Wages paid.	Cost of materials.	Value of products.
Hats, caps, and furs:						
1901	115	$4,135,235	3,273	$881,960	$3,328,984	$5,876,467
1905	143	6,835,510	3,889	1,180,840	.....	9,104,297
1915	159	6,714,461	3,114	1,265,088	4,084,021	7,559,257
1917	198	12,349,578	3,558	2,457,943	8,446,416	15,551,825
1918[3]	199	14,431,530	3,867	2,665,674	8,438,424	17,112,425
Furs, dressed:						
1905	3	131,000	214	76,552	.....	1,970,190
1917	12	575,423	488	347,296	266,804	1,071,805
Fur goods: 1917	55	852,423	267	204,363	848,920	1,523,552

[1] Data from Postal Census of Manufactures, Canada, 1916. The census of 1910 was limited to industries employing five hands or over, while that of 1915 included all establishments irrespective of number of employees. Data for 1915 have been brought to 1910 basis.

[2] Data from the Canada Year Book.

[3] Data from United States Commerce Reports, Aug. 28, 1920.

Canada's foreign trade in furs.[1]

Furs, and manufactures of, imported from—	Fiscal years ending Mar. 31—		
	1914	1915	1916
Astrakhan or Russian hare skins and China goat plates or rugs, wholly or partially dressed but not dyed (free)	$86,088	$128,045	$101,880
United States	17,880	63,124	65,612
United Kingdom	16,723	45,127	16,323
China	26,895	5,485	540
Other countries	24,588	12,309	19,405
Fur skins of all kinds, not dressed in any manner n. e. s. (free)	2,241,877	1,328,864	1,986,581
United States	1,388,415	1,124,144	1,937,386
United Kingdom	250,269	68,239	33,087
Germany	411,607	118,601	.....
Russia	67,110	52	.....
Other countries	124,476	17,828	16,108
Fur skins, wholly or partially dressed, n. e. s. (dutiable)	699,979	375,675	349,168
United States	148,503	135,252	239,820
United Kingdom	153,711	62,583	40,402
France	164,311	95,859	60,219
Germany	215,357	67,351	.....
Other countries	18,097	14,620	8,727
Manufactures of fur (dutiable)	719,596	401,889	284,625
United States	215,209	159,705	161,376
United Kingdom	439,540	219,084	122,904
France	11,482	10,644	345
Germany	50,331	11,723	.....
Other countries	3,034	733	.....
Other furs (free)	7,088	6,976	7,131
United States	6,869	6,638	6,631
United Kingdom	26	.....	.....
Other countries	193	338	500
RECAPITULATION.			
United States	1,776,876	1,488,863	2,410,825
Dutiable	363,712	294,957	401,196
Free	1,413,164	1,193,906	2,009,629
United Kingdom	860,269	395,033	212,716
Dutiable	593,251	281,667	163,306
Free	267,018	113,366	49,410
Other countries	1,117,481	355,553	105,844
Dutiable	462,612	200,940	69,291
Free	654,869	154,613	36,553
Grand total	3,754,626	2,239,449	2,729,385
Dutiable	1,419,575	777,564	633,793
Free	2,335,051	1,461,885	2,095,592

Furs and manufactures of, imported from—	Fiscal years ending Mar. 31—			
	1917	1918	1919	1920
Astrakhan or Russian hare skins and China goat plates or rugs, wholly or partially dressed, but not dyed	$103,431	$133,172	$145,667	$366,315
United States	72,211	111,824	42,861	104,174
United Kingdom	27,613	.....	.....	192,259
Other countries	3,607	21,348	102,806	69,882
Fur skins of all kinds, not dressed in any manner	2,288,766	2,894,365	3,378,179	10,295,065
United States	2,234,627	2,775,486	3,092,467	9,413,769
United Kingdom	5,026	27,453	47,410	324,459
Other countries	49,113	91,426	238,302	556,837
Fur skins wholly or partially dressed	687,595	518,721	635,430	1,329,607
United States	504,906	346,659	397,610	686,554
United Kingdom	50,930	38,889	13,172	104,769
Other countries	131,759	133,173	224,648	538,284
Manufactures of fur	488,101	417,308	350,769	267,038
United States	304,601	323,690	262,367	233,238
United Kingdom	183,474	92,420	87,874	32,576
Other countries	26	1,198	528	1,224
Hatters' fur	196,525	308,536	507,837	592,301
United States	190,528	292,505	465,894	542,378
United Kingdom	5,997	16,031	41,943	49,923
Other furs	301	3,904	12,992	27,194
United States	297	3,746	6,120	2,985
Other countries	4	158	6,872	24,209
Grand total	3,764,719	4,276,006	5,030,874	12,877,520
United States	3,307,170	3,853,910	4,267,319	10,983,098
United Kingdom	273,040	174,793	190,399	703,986
Other countries	184,509	247,303	573,156	1,190,436

[1] Data from Trade Reports, Department of Customs, Canada.

Canada's foreign trade in furs—Continued.

Furs, and manufactures of, exported to—	Fiscal years ending Mar. 31—						
	1914	1915	1916	1917	1918	1919	1920
Fur skins, dressed	$11,550	$29,862	$110,198	$76,747	$94,514	$85,381	$94,488
United States	10,035	19,506	106,396	33,476	51,445	39,017	33,180
United Kingdom	1,261	6,300	2,605	18,379	500	16,125	35,532
Other countries	254	4,056	1,207	18,892	42,569	30,239	25,976
Fur skins, not dressed	5,557,926	2,726,961	4,668,139	5,684,720	8,024,028	13,499,431	20,617,291
United States	2,139,228	1,320,887	3,644,097	4,801,423	6,355,661	9,658,753	16,532,801
United Kingdom	3,059,305	1,297,702	929,217	869,455	1,651,649	3,743,178	3,936,839
Other countries	359,393	108,372	94,825	13,842	17,313	97,500	147,651
Fur skins, the produce of marine animals	45,203	12,574	19,156	43,497	49,609	32,358	10,818
United States	3,174	5,042	12,373	38,477	47,398	31,502	8,021
United Kingdom	42,029	7,528	6,717	5,020	1,300	856	2,700
Other countries	.....	4	66	.....	911	.....	97
Manufactures of fur	53,070	29,808	37,192	38,419	31,166	120,451	199,174
United States	23,992	8,537	10,560	10,021	17,062	14,192	20,532
United Kingdom	21,597	17,097	19,282	18,027	4,060	3,796	83,846
Other countries	7,481	4,174	7,350	10,371	10,044	102,463	94,796
Grand total	5,667,749	2,799,205	4,834,685	5,837,383	8,199,312	13,737,621	20,921,971
United States	2,176,429	1,353,972	3,773,416	4,883,397	6,470,966	9,743,464	16,594,534
United Kingdom	3,124,192	1,328,627	957,821	910,881	1,657,509	3,763,955	4,058,917
Other countries	367,128	116,606	103,448	43,105	70,837	230,202	268,520

The most recent data relating to the domestic production of furs in Canada are for 1910, in which year the value of the principal classes of skins and furs of wild animals collected was:

Kind of fur.	Number.	Value.
Assorted	.....	$445,320
Bear	4,509	44,923
Beaver	24,895	131,833
Fox	17,589	222,145
Lynx (including wildcat)	8,159	114,756
Marten	31,437	221,583
Mink	45,973	221,500
Muskrat	915,754	256,213
Otter	5,721	102,291
Seal (fur)	5,108	32,997
All others	91,036	133,989
Total	.....	1,927,550

The production of furs in Canada in 1910 was more than double that of 1900, the value increasing by 114.25 per cent during the decade. It is said that while fur values have risen in recent years the number of skins collected shows a decrease in each class on account of the gradual settlement of previously uninhabited regions.

Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883....	435	Fur, articles made of, and not specially enumerated or provided for in this act.	30 per cent ad valorem.
1883....	450	Hatters' furs, not on the skin, and dressed furs on the skin.....	20 per cent ad valorem.
1883....	705	Furs, undressed.....	Free.
1883....	706	Fur skins of all kinds, not dressed in any manner.....	Do.
1890....	444	Furs, dressed on the skin, but not made up into articles, and furs not on the skin, prepared for hatters' use.	20 per cent ad valorem.
1890....	461	Manufactures of fur * * * or of which these substances or either of them is the component material of chief value * * * not specially provided for in this act.	35 per cent ad valorem.
1890....	587	Furs, undressed.....	Free.
1890....	588	Fur-skins of all kinds not dressed in any manner.....	Do.
1894....	492	Furs, undressed; dressed fur pieces suitable only for use in the manufacture of hatters' fur.	Do.
1894....	493	Fur skins of all kinds not dressed in any manner.....	Do.
1894....	329	Furs dressed on the skin, but not made up into articles.....	20 per cent ad valorem.
		Furs not on the skin, prepared for hatters' use.....	Do.
1894....	353	Manufactures of * * * fur * * * or of which these substances or either of them is the component material of chief value, all of the above not specially provided for in this act.	30 per cent ad valorem.
1897....	426	Furs dressed on the skin, but not made up into articles, and furs not on the skin, prepared for hatters' use, including fur skins carroted.	20 per cent ad valorem.
1897....	450	* * * manufactures of fur * * * or of which these substances or either of them is the component material of chief value, not specially provided for * * *.	35 per cent ad valorem.
1897....	561	Furs, undressed.....	Free.
1897....	562	Fur skins of all kinds not dressed in any manner and not specially provided for in this act.	Do.
1909....	439	Furs dressed on the skin, not advanced further than dyeing, but not repaired.	20 per cent ad valorem.
		Manufactures of furs, further advanced than dressing and dyeing, when prepared for use as material, including plates, linings, and crosses.	35 per cent ad valorem.
		Articles of wearing apparel of every description, partly or wholly manufactures, composed of or of which fur is the component material of chief value.	50 per cent ad valorem.
		Furs not on the skin, prepared for hatters' use, including fur skins carroted.	20 per cent ad valorem.
1909....	573	Furs, undressed.....	Free.
1909....	574	Fur skins of all kinds not dressed in any manner and not specially provided for in this section.	Do.
1913....	348	Furs dressed on the skin, not advanced further than dyeing.....	30 per cent ad valorem.
		Plates and mats of dog and goat skins.....	10 per cent ad valorem.
		Manufactures of furs, further advanced than dressing and dyeing, when prepared for use as material, joined or sewed together, including plates, linings, and crosses, except plates and mats of dog and goat skins, and articles manufactured from fur not specially provided for in this section.	40 per cent ad valorem.
		Articles of wearing apparel of every description, partly or wholly manufactured, composed of or of which hides or skins of cattle of the bovine species or of the dog or goat are the component material of chief value.	15 per cent ad valorem.
		Articles of wearing apparel of every description, partly or wholly manufactured, composed of or of which fur is the component material of chief value, not specially provided for in this section.	50 per cent ad valorem.
		Furs not on the skin, prepared for hatters' use, including fur skins carroted.	15 per cent ad valorem.
1913....	491	Furs and fur skins, undressed.....	Free.
1913....	603	Skins of hares, rabbits, dogs, goats, and sheep, undressed.....	Do.

COURT AND TREASURY DECISIONS.

Dressed animal skins with the wool or hair on, when unprofitable to separate the wool or hair from the skin and use it for wool or hair purposes, are not within the terms "wools" or "hair" (pars. 286, 304, and 650), but are, if devoted to fur uses, within the word "furs" in paragraph 348 which is not limited to products of strictly fur-bearing animals, but include sheepskins with wool on when devoted to fur uses and not bearing so great an amount of wool as to make it commercially practicable to remove the wool and use it for wool purposes. *Sheepskins, entire, or pieced by sewing in the*

shapes of rectangles and crosses with the natural growth thereon and the flesh side dressed, used as ordinary fur skins are used, and not bearing wool to the extent making removal of the wool commercially practicable, are within the provision for "furs dressed on the skin." (Ayers *v.* United States, 8 Ct. Cust. Appls., 87, of 1917.) *Hair too short to be commercially spun into yarn or for the making of textiles* and chiefly employed in the making of furs or fur garments, or for other fur uses, is that kind of hair which is known as fur, though it be taken from the back of a sheep. The hair of the Angora rabbit resembles that of the Angora goat or alpaca more nearly than it does that of the sheep or the camel. (Bloomingdale *v.* United States, 8 Ct. Cust. Appls., 104, of 1917.) Crosses made of dressed kidskins sewed together are within paragraph 348 as manufactures of fur prepared for use as material joined or sewed together and not as plates and mats of goatskins. It is not material for the purposes of this provision that goatskin crosses might to some extent have been imported if it is shown that they are not commonly imported in that form. With proof that kidskins and goatskins are different things commercially, the provision for goatskin articles will be held not to include kidskin articles. With proof that "crosses" and "plates" as applied to articles made of fur skins have distinct meanings, a cross can not be dutiable as a plate under paragraph 348. (Seward *v.* United States, 9 Ct. Cust. Appls., 4, of 1918.) *Sheepskins tanned* and dressed and sewed in the form of rugs and commonly known in the trade as plates made from China sheepskins and apparently used in the making of fur robes for baby carriages are manufactures of fur within paragraph 348. (Abstract 42322, of 1918.)

Dressed goatskins and *dogskins* are dutiable at 10 per cent by similitude to goatskin and dogskin plates and mats under the second provision of paragraph 348, there being no provision in the tariff which includes them directly. (G. A. 7569, T. D. 34493, of 1914; Abstract 36623, of 1914, T. D. 34237, of 1914.) But *China goatskin mats and rugs* made up into completed articles are dutiable at 15 per cent under paragraph 348. (T. D. 34544, of 1914.) Men's gloves having leather fingers, fur backs, and lined with fur and wool, were held dutiable as fur wearing apparel under paragraph 348. (Abstract 36969, of 1914.) *Fur pieces* or *clippings* cut from dressed and dyed rabbit skins, used for trimming slippers, etc., were held dutiable under the first provision of paragraph 348. (Abstract 37558, of 1915.)

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UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPH 347 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

Paragraph 347:
Feathers, Artificial
Flowers and Millinery Ornaments

REVISED EDITION

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FEATHERS, ARTIFICIAL FLOWERS, AND MILLINERY ORNAMENTS.

SUMMARY.

This survey deals particularly, but not exclusively, with manufactured flowers and feathers suitable for millinery ornaments, although the statistical data include all classes of artificial flowers and fruits, and common feathers as well as ornamental feathers.

There were 456 establishments engaged in the flower and feather industry in 1914, capitalized at $8,745,000, employing 9,291 wage earners, and turning out a product valued at $19,065,000. It is estimated that there were more home workers than factory workers engaged in the industry; in fact, only a few firms carry on all the work on flowers in factories. It is an industry employing mostly women and hand labor, 81.4 per cent of the factory workers being women.

The industry is located almost wholly in New York City, 85.8 per cent of the total value of products being credited to that city in 1914. It is a seasonal industry and faces periods of unemployment. It is thus difficult to retain labor in the trade. Present wages paid in the industry are not known in detail, but the prevailing wages have always been low in comparison with other industries. The individual form of ownership prevails and the size of establishments is usually small. The few large factories, however, turn out the greater part of the total output.

The number of workers in the French artificial flower and feather industry is probably double that in the American industry. Flower makers in France and Germany remain in the trade and become more skilled than workers in the American industry. The season of unemployment is usually not so long as in America. The greatest advantage possessed by the French industry is its superiority in designing, which makes France the leader in styles. So long as this situation exists the demand for French flowers and feathers will persist. The high quality of their workmanship is also an important factor. Many small flowers requiring a great deal of patient hand labor are made in Germany.

Imports for consumption before the war were about 50 per cent of the value of domestic products. During the war imports declined from a total value of $12,442,828 in the fiscal year 1913 to $2,692,621 in the fiscal year 1918. The figures for the fiscal year 1920 show an increase in imports over 1918, crude ostrich feathers reaching a total value of $2,015,326, and flowers and feathers suitable for millinery ornaments reaching a total value of $2,256,869, largely from France. Other classes have not shown much increase since the close of the war.

As long as style is the principal factor in the trade, and as long as Paris sets the style as well as produces flowers and feathers of supe-

rior workmanship, there will be a demand for imported flowers and feathers. The American producer will probably never attempt to make many of the small flowers imported from Germany which require so much painstaking labor. The domestic production of common feathers for beds and pillows is not sufficient to supply the demand.

Feathers, artificial flowers, and millinery ornaments—Summary table.

Year.	Domestic production.	Imports for consumption.	Domestic exports.	Ratio to production.		Value (imports for consumption).	Amount of duty.	Equivalent ad valorem rate.
				Imports.	Exports.			
				Per cent.	*Per cent.*			*Per cent.*
1910	[1] $23,981,000	[2] $12,043,595	$312,784	50.22	1.3	$12,043,595	$4,310,117	35.79
1911		9,786,392	250,906			9,786,392	3,531,961	36.09
1912		8,486,771	369,693			8,486,771	3,099,791	36.53
1913		12,442,828	690,612			12,442,828	4,241,821	34.09
1914	19,065,000	8,902,281	640,020	46.69	3.36	8,902,281	3,358,918	37.73
1915		5,546,539	281,806			5,546,539	2,321,205	41.85
1916		4,607,088	312,113			4,607,088	1,812,440	39.34
1917		3,675,671	368,862			3,675,671	1,519,826	41.35
1918		2,692,621	302,236			2,692,621	971,793	36.09
1919		3,686,299	[3] 863,250			3,686,299	1,036,914	36.47
1920		5,468,470				5,468,470	1,984,704	28.12
1920[3]		5,609,787	678,644			5,609,787	2,282,830	40.69

[1] Census of 1909.
[2] Imports for consumption include all feathers, artificial flowers, and millinery ornaments (dutiable).
[3] Calendar year.

General Information.

1913 TARIFF PARAGRAPH.

347. Feathers and downs, on the skin or otherwise, crude or not dressed, colored, or otherwise advanced or manufactured in any manner, nor specially provided for in this section, 20 per cent ad valorem; when dressed, colored, or otherwise advanced or manufactured in any manner, and not suitable for use as millinery ornaments, including quilts of down and manufactures of down, 40 per cent ad valorem; artificial or ornamental feathers suitable for use as millinery ornaments, artificial and ornamental fruits, grains, leaves, flowers, and stems or parts thereof, of whatever material composed, not specially provided for in this section, 60 per cent ad valorem; boas, boutonnieres, wreaths, and all articles not specially provided for in this section, composed wholly or in chief value of any of the feathers, flowers, leaves or other material herein mentioned, 60 per cent ad valorem: *Provided*, That the importation of aigrettes, egret plumes, or so-called osprey plumes, and the feathers, quills, heads, wings, tails, skins, or parts of skins of wild birds, either raw or manufactured, and not for scientific or educational purposes, is hereby prohibited; but this provision shall not apply to the feathers or plumes of ostriches, or to the feathers or plumes of domestic fowls of any kind.

DESCRIPTION.[1]

Artificial flowers.—This classification includes the output of establishments engaged in the manufacture of artificial leaves, palms, grasses, wreaths, plants, foliage, and vines, thorns, buds and fruits, wax flowers, and in the preservation of flowers and

[1] Abstract of the Census of Manufactures, 1914—pp. 239, 240.

plants, stems, tubing, and other materials for use in the manufacture of artificial flowers. 'There is considerable overlapping between this industry and "feathers and plumes." * * * In addition, artificial flowers to the value of $820,520 were reported in 1914 by establishments assigned to other classifications, principally "feathers and plumes."

Feathers and plumes.—This classification includes the output of establishments producing fancy feathers, plumes—horse, theatrical, hearse, military, and society—boas, muffs, and quills, and also those engaged in the dyeing, curling, and renovating of ostrich feathers. * * * In addition, feathers and plumes to the value of $1,339,869 were reported for 1914 by establishments assigned to other classifications, principally "artificial flowers" ($1,101,223), "house-furnishing goods" (feather pillows and beds), and "millinery and lace goods" (trimmed hats and hat frames).

DOMESTIC PRODUCTION.[1]

(*a*) *Size and importance of the industry.*—There were 456 establishments reported in 1914 engaged in the combined artificial flower and feather and plume industries. They employed 9,291 wage earners and their capital was $8,745,000, with a product valued at $19,065,000.

The two industries were quite evenly divided as to number of establishments and the number of wage earners employed, but the value of products of the feather and plume industry was nearly $3,000,000 in excess of that of the artificial flower industry. The home manufacture of flowers is very extensive, but the number of people employed in this manner is not, of course, included in the above figures.

(*b*) *Concentration in New York.*—Only one industry in 1914, according to the Census of Manufactures, showed a greater degree of concentration in one State and one city than did flowers and feathers and plumes. New York City was credited with 85.8 per cent of the total value of products of the flower and feather industry. Not only is the industry concentrated in New York City, but in one section of the city, namely, between Prince and Fourteenth streets.

(*c*) *A seasonal industry.*—Flowers and feathers are both seasonal industries, and when their manufacture is carried on in the same establishment they have a tendency to fit together, so that the slack season in feathers is the busy season in flowers. The average number employed in the flower industry in 1914 was 4,808, the maximum number being 5,418 in November and the minimum number being 3,840 in June. The average number in the feather industry for the year was 4,483, while the maximum was 5,391 in September and the minimum 3,829 in December. However, since flowers and feathers are not usually manufactured in the same factory, and since many employees will not work on both flowers and feathers, each industry has a slack season of about four months or more, during which many employees must be "laid off."

(*d*) *Women and hand labor.*—Both flowers and feathers are manufactured principally by women, and almost wholly by hand labor. In 1914, 81.4 per cent of the total number employed were women, 4.1 per cent were wage earners under 16 years of age, and 14.5 per cent were men. Men were employed in cutting and dyeing flowers and in dyeing feathers, but practically all the other processes are carried on by women and children. Home workers are not included in the above figures.

[1] Artificial flower makers, Mary Van Kleeck, 1913.

That practically no machine processes are used is shown by the fact that for the year 1914 in the State of New York the total horsepower—steam, gas engine, and electric—used in 369 establishments was only 450—148 horsepower for the flower industry and 302 horsepower for feathers. In the very nature of the case large-scale machine processes can not be used, and inasmuch as standardization of product and mass production is contrary to the rules of fashion, a large value of output per establishment, with a low unit cost of production is not to be expected.

(e) *Hours of work.*—In 1914 the majority of wage earners were employed in factories where the prevailing hours of work per week were 48 to 54, while nearly 1,500 were employed in factories working less than 48 hours. About one-third were employed in factories working 54 hours. A few were employed in factories having more than 54 hours per week, and 19 were employed in the feather industry where the prevailing hours were from 60 to 72 per week.

(f) *Wages.*—The wages paid were very low. The following quotation from an investigation made by the Russell Sage Foundation indicates the prewar rate of wages: "In nearly four-fifths of the shops investigated, 88 in number, employing 4,169, or 80 per cent of the total number of women in the trade, the highest weekly wage received by any woman was less than $15, while 39 per cent were in shops in which the maximum never reached $12." According to the census figures of 1905, more than half of the women employed (55.3 per cent) in the flower and feather industry earned less than $6 a week during a busy week of the year, slightly more than one-fourth (483) earned $8 or over, and only about 1 in 16 rose to $12 or over. Weekly wage statistics have not been compiled in later census reports.

(g) *Home work.*—The following extract from "Artificial flower makers," by Mary Van Kleeck, indicates the extent of home work in the flower industry:

> Of the 114 firms investigated only 24 stated that all the manufacturing was done in the workroom. The remaining 90 reported that they gave out part of their work to home workers. The statements of 76 of these firms showed that they had on their pay rolls between 2,200 and 2,400 families who made flowers at home. They had no records of the number of individual workers reported in these families, but judging from our investigations of a group of home workers, three in a family is a low average. Thus, according to the reports of employers, home workers in this trade in New York must number about 7,000 and are more numerous than employees in the shops.

(h) *Value of products.*—The total value of products of the flower and feather industry in 1914 was $19,065,000, of which $7,614,000 was flowers and $11,451,000 was feathers and plumes.

The cost of materials used for artificial flowers was $3,207,000. Therefore the value added by manufacture was $4,407,000, or about 58 per cent of the total. The cost of materials used in the feather industry was $6,102,000; therefore $5,349,000, or about 47 per cent of the total, was added by manufacture.

Flower making, materials, and processes.—The raw materials used in making flowers are chiefly muslin, silk, and velvet. Usually white is used, and the color is applied later. A strip of the cloth, generally a yard and a half long, is first stretched on a frame, and starch is applied with a brush. If leaves are to be made, the color is applied to the cloth on the frame. The cloth is next cut into petals. The tools used are a steel die or stamp, a lead block, and a wooden mallet.

The petals are sent to the dyer, who copies the color from the design or model. Sometimes petals are stenciled, as in the case of orchids. The finished petals are dried between sheets in a wire frame, frequently in a room artificially heated. These processes of starching, cutting, and dyeing are usually done by men.

The work of the women, either at home or in the shops, consists of preparing, making, and branching. To "prepare" the petals means to shape them by curling their edges, pinching them between the fingers, or "goffering" them. Goffering is the making of the cup-like shape of a petal and is done with a tool consisting of a ball at the end of a handle. This ball is heated on a gas stove and applied to the petal as it rests on the palm of the hand. Crimping machines are used in some factories for the cheaper flowers. These machines curl the edges of a number of petals at one time and usually punch a hole in the petal at the same time.

"Making" includes the various processes of arranging the petals to form a flower and attaching them to a stem. In the higher-grade flowers each petal is pasted in its place, but in the cheaper flowers they are "slipped up"—that is, the stem is inserted through a hole in each petal, which is then slipped up into its place and held with paste. The latter process requires neither taste nor skill, but demands speed. Leaves are sometimes made in separate factories. After the leaves have been cut, a stem is pasted on each leaf. The leaf is then veined on a pressing machine moved by a handwheel.

When flowers and leaves are completed they are brought together and arranged to appear pleasing to the customer. This is called branching and is considered the most important work in the trade.

The work of designing is of the utmost importance to any flower manufacturer, since the product must be popular in order to find ready sale. Practically all of the leading designs are imported from Paris. The cheaper flowers are usually a copy or imitation of the higher class product. Manufacturing is usually done to fill orders taken on the samples shown, since the risk involved in making up stock in advance is great. This fact is a further cause for the slack season in the industry. The finer the flower the more important it is that it be produced by one hand, and in the higher grade establishments each worker prepares and makes the whole flower.

Feather making.[1]—As in flower making, dyeing is one of the most important processes, and it is done by men. The processes carried on by women are "stringing" or tying the feathers at intervals on a cord in preparation for dyeing; "steaming" them, or holding them over boiling water, to make them pliable or to give them certain effects; and "preparing" or cleaning and sorting the feathers.

The prepared feathers are pasted or sewed on frames in different designs, such as heads, breasts, and wings; or they may be wired or branched into various styles of feather ornaments. The last process is stemming or papering the free ends of the wire.

(*a*) *Organization.*—Artificial flowers: There were 217 establishments reported in 1914 engaged in the manufacture of artificial flowers, with a total capital of $3,349,000, or an average individual capital of $15,433. The total average number of wage earners employed was 4,808, or approximately 22 in each establishment. While by far the

[1] See Artificial Flower Makers, Mary Van Kleeck.

greater number of establishments employed less than 50 wage earners, 11 employed between 51 and 100, or 16.1 per cent of the total number, and 11 others employed between 101 and 250, or 33.4 per cent of the total number.

More than one-half of the flower establishments turned out a product of less than $20,000 each, 65 establishments turned out a product between $20,000 and $100,000 in value, and 22 establishments turned out products between $100,000 and $1,000,000 in value, with an aggregate practically equal to all the others combined.

There were 137 flower establishments owned by individuals, 33 by corporations, and 47 by some other form of ownership. These different classes employed nearly the same number of wage earners and turned out products of nearly equal value, except that the corporations were somewhat less in number and value of products.

(*b*) *Feathers and plumes.*—The feather and plume industry was credited with 239 establishments in 1914, having a capital of $5,396,000, or an average individual capital of $22,577. They employed 4,483 wage earners, or an average of 19 in each establishment. By far the greater number employed only a small number of wage earners, 219 out of 239 employing not over 50 wage earners, while 14 employed from 51 to 100, and only 6 employed between 101 and 250.

Nearly one-half of the establishments manufacturing feathers (111), turned out a product valued at not over $20,000 each; 93 turned out products valued at between $20,000 and $100,000; and 35 produced between $100,000 and $1,000,000. The output of the 35 establishments was greater in value than all the others combined.

There were 133 establishments owned by individuals, 47 by corporations, and 59 by some other form of ownership. They employed approximately the same number of workmen, but the establishments owned by some other form turned out products valued at about $300,000 more than the value of the products of each of the other two classes.

From this it will be seen that the flower and feather industries are carried on mainly by individual and small factories or shops, although the large factories furnished a large share of the total output.

Geographical distribution.—The total value of the products of the feather and plume industry in 1914 was $11,451,000, of which New York State furnished $10,274,000. Pennsylvania furnished a product valued at $787,000, and California furnished $159,000 of the total.

Artificial flowers were also produced largely in New York, the total for the industry in 1914 being $7,614,000, while New York's total was $6,181,000. Pennsylvania was second with a total of $688,000, and Illinois third with a total of $348,000.

Domestic production and consumption.—Imports for consumption of flowers and feathers prior to the war were about equal to one-half the value of domestic products, while exports of domestic products were very small. The demand for the imported flowers and feathers has not much relation to the tariff.

French flowers are undoubtedly superior, as a rule, to American-made flowers. This is due to greater skill and experience on the part of French flower makers and particularly to the French superiority of designs. Low wages and periods of unemployment in the American industry are not conducive to skill and constancy to the trade.

Ostrich feathers originate mainly in South Africa and must be imported, since the ostrich industry in the United States is very small. Other feathers and millinery ornaments are also imported in large quantities. As long as America looks to Paris for its styles it is reasonable to assume that imports of flowers and feathers will continue to be large. Improvements in design and execution by American makers will be necessary if the ratio of imports to domestic production is to be reduced.

Domestic exports.—Domestic exports are very small, averaging a little over $300,000 annually since 1910, except in 1913 and 1914, when they were double that amount. Exports of feathers only are given. They went principally to Canada and to the European countries.

The ostrich industry.—Detailed information regarding the ostrich industry is given in the auxiliary file of this survey, pages 15 to 25. Ostrich farming was first undertaken in South Africa late in the sixties, and grew to large proportions until checked by the war in 1914. In 1913 it was estimated that there were at least 900,000 ostriches in South Africa. In 1913 a pair of the best breeding ostriches easily sold for $5,000 in South Africa, and the prime feathers (perfect white wing feathers from the cock birds) brought from $120 to $140 a pound (about 90 feathers to a pound). An ostrich yields about 1½ pounds of feathers annually which, before the war, averaged about $20 to $30 in value. Exports of ostrich feathers from South Africa in 1913 were valued at $14,600,000.

The ostrich industry in the United States began to develop about 1900, when there were about 500 birds in this country. In 1910, according to the Census of Agriculture, there were 5,349 ostriches in the country, of which 4,028 were found in Arizona, 1,082 in California, 147 in Arkansas, and 92 in Florida. According to A. R. Lee, Bureau of Animal Industry, Circular 172, there were 6,100 breeding or feather-producing ostriches in the United States in January, 1910. A pair of breeding birds in this country was valued at about $800.

The war destroyed the feather market. Import restrictions in England and later in the United States, and the lack of shipping space for this trade, caused a practical cessation in the use of ostrich feathers. The number of birds declined rapidly and feathers sold in 1917 in South Africa at the low averge of $2.70 to $3.25 a pound. The number of birds in South Africa was reduced by at least 50 per cent. The industry in the United States was practically abandoned. Mr. Lee now states (April, 1920) that there are at present probably 500 to 600 birds in this country.

The present demand for feathers is again good and the price is fair, so that it may be expected that the industry will soon regain some of the lost ground. In Arizona, however, the farms formerly devoted to ostrich farming are now put to other uses, and doubt is expressed as to whether they will again raise ostriches.

FOREIGN PRODUCTION.[1]

Paris is the center of the artificial flower industry and is looked to for the "style." The Employers' Syndicate includes 500 shops in

[1] Artificial Flower Makers, 1913, Mary Van Kleeck.

its membership, and, in addition to these, Paris contains many small contract shops which are not admitted to the syndicate.

The president of the syndicate estimates the total number of women flower makers working in the shops and at home in Paris and its surrounding districts to be 30,000, while the flower and feather maker's union believes that there are 28,000 workers in the trade, of whom 3,000 are men and 25,000 women. Of these women, 15,000, the union estimates, work at home and 10,000 work in shops. These figures show that probably more than twice as many women are employed in the artificial-flower industry in Paris as in shops and home work in New York.

Except in exclusive shops, where it is carried on as an art, the making flowers in Paris has become similar to that in New York. The demand for quantity production has replaced the more artistic product, which required a great deal of time and was costly. A number of hours might be spent by one person on a single fine flower.

Seasonal unemployment is similar to that in New York, although not so long in duration. Wages varied from $14 a week for the best flowers to about $5 per week for the cheaper flowers, with many workers earning less than $5. It does not appear that there was much difference in the average wages paid in New York and Paris. The wages earned by home workers were also about the same.

The above comments on the artificial-flower industry apply also to the shops working with feathers, some of the shops working on both flowers and feathers. The demands of the styles and seasons determine largely the output of the shops.

London is the principal feather market of the world, and consequently many of the imports into the United States come from England. This does not indicate that they are of English production. Ostrich feathers originate in South Africa. Imports of manufactured feathers come principally from France, and other millinery ornaments, flowers, fruits, grains, etc., come from Germany and France.

IMPORTS.

Imports of ostrich feathers, crude, reached a total value of $6,252,298 in the fiscal year 1913, coming from England and South Africa, but originating almost wholly in South Africa. The value of imports of this class decreased to $534,921 in 1917.

Imports of other crude feathers and downs amounted to nearly $2,000,000 in 1913, of which $1,299, 928 came from France. England furnished the next largest amount. Some feathers of this class also came from Germany, China, and Hongkong.

The value of imports of manufactured feathers not suitable for millinery purposes averaged about $1,500,000 before the war, about two-thirds of which came from France and about one-third from Germany. The value of this class of feathers has been almost insignificant since 1915.

Imports of millinery ornaments, including feathers, flowers, and fruits, reached a total value of $3,131,972 in 1914, and have not decreased in value as much as the various classes of feathers, the low figure of $1,013,509 having been recorded in 1918. Imports of this class came from France and Germany in almost equal value before the war, but since the war have come almost wholly from France.

The figures for the most important classes of imports for consumption are diagramed on the following page. Curve No. 1 represents the importation of crude or unmanufactured ostrich feathers; Curve No. 2

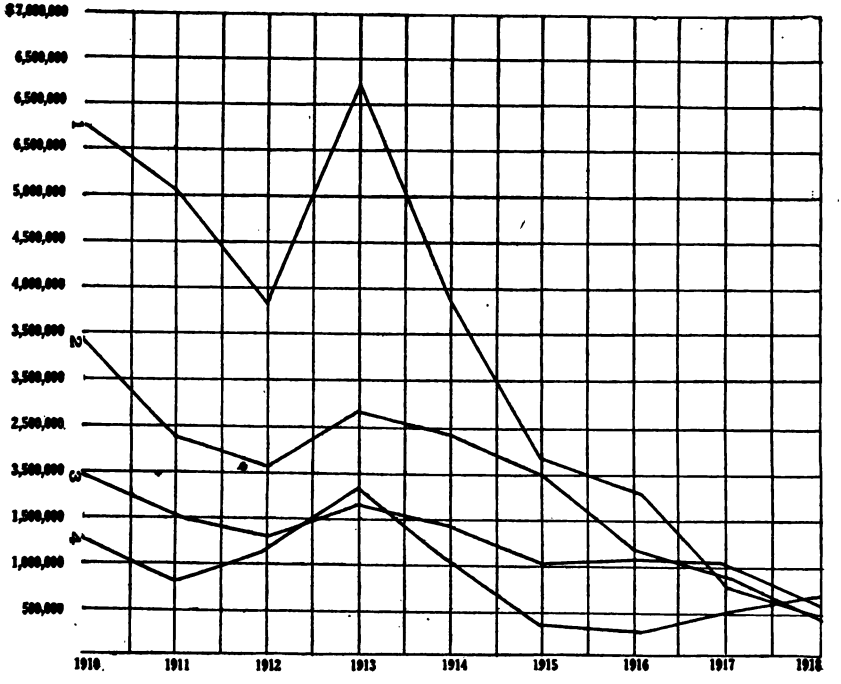
represents the imports of ornamental flowers, feathers, grains, etc., not specially provided for; Curve No. 3 represents the imports of manufactured ornamental feathers, exclusive of a small amount of manufactures ostrich plumes; and Curve No. 4 represents the imports of crude ornamental feathers for millinery purposes classified as "all other."

It will be seen from the diagram, that the greatest decrease has been in the imports of crude ostrich feathers. Changes of fashion no doubt had something to do with this reduction of imports, but it is clear that the importation of all kinds of millinery ornaments gradually declined until the four classes touched the $500,000 mark in 1918. This figure represents roughly 8, 20, 28, and 30 per cent, respectively, of the imports of the classes of products named above for the peak year of 1913.

Imports by countries for the calendar years 1919 and 1920 indicate that the trade in the two principal classes of flowers and feathers has been on the increase. Ostrich feathers, crude, valued at $2,698,146 in 1919, and $1,088,111 in 1920, were imported, compared with a total of $746,709 in the fiscal year 1918. The class of millinery ornaments, which consists principally of artificial flowers, fruits, etc., showed an increase of $842,730 over the fiscal year 1918, or a total value of $1,856,239 for the calendar year 1919, of which $1,717,495 came from France. For 1920 the total increased to $3,270,257.

IMPORTS FOR CONSUMPTION OF FLOWERS AND FEATHERS.

CURVE 1.—Crude ostrich feathers.
CURVE 2.—Artificial flowers, grains, etc., n. s. p. f.
CURVE 3.—Manufactured ornamental feathers.
CURVE 4.—Crude ornamental feathers—"all other."



PRICES.

The number of varieties of millinery ornaments is so great and the style changes so frequently that it is not considered of much value to quote prices. Imported and domestic articles are also rarely directly comparable. Many of the smaller flowers, such as forget-me-nots and very small roses, requiring a great deal of painstaking hand labor, are practically not made in this country, so that imports frequently are supplementary and not competitive. Furthermore, articles which may be competitive are difficult to compare, because of variation in color or shade, or material and workmanship.

The following prices are given merely as a suggestion of the range of prices on some more standard articles (wholesale prices):

Domestic wreaths, mixed—flowers, fruits, grasses, $6 to $48 a dozen; imported wreaths, $6 up. Pansies, imported, small, 7 in bunch, $12 a dozen bunches; pansies, imported, large, 5 in a bunch, $15 a dozen bunches. Violets, domestic and imported, $13.50 a dozen bunches. Roses, from $3 a dozen bunches for little June roses, to $7.50 and up a dozen for larger roses. A good quality rose of fair size usually costs from $12 to $24 a dozen, although much higher prices prevail for the finest quality.

Forget-me-nots, imported only, $3 a dozen bunches.

Leaves (foliage), $3 to $4.50 and up, a dozen bunches.

Ostrich feathers range in price from $6 to $60 per dozen at the present time. All kinds of imitation feathers are made, since the prohibition of imports of the feathers and plumes of wild birds.

The price of superior white goose feathers in 1920 (Chinese) was 55 cents a pound, more than double what it was in 1915. This price is c. i. f., New York, less duty. Superior Szechuan duck feathers (Chinese), cost 13 cents a pound in 1915 and in 1920 cost 35 cents, c. i. f., New York.

TARIFF HISTORY.

The act of 1894 imposed a duty of 35 per cent ad valorem on feathers, flowers, fruits, etc., when suitable for millinery ornaments, and also including quilts and manufactures of down. Feathers and downs for beds and crude feathers and downs of all kinds were placed on the free list.

The act of 1897 assessed crude feathers and downs at 15 per cent ad valorem, and manufactured flowers and feathers and millinery ornaments of all kinds at 50 per cent ad valorem.

The act of 1909 raised these rates to 20 per cent and 60 per cent ad valorem, respectively.

The act of 1913 retained the rates of 20 per cent for crude feathers and created a new class—feathers manufactured but not suitable for millinery ornaments—at 40 per cent. The rate on artificial and ornamental feathers and other millinery ornaments remained at 60 per cent ad valorem. The act of 1913 also prohibited the importation of aigrettes and the feathers of wild birds, except for scientific or educational purposes.

COMPETITIVE CONDITIONS AND TARIFF CONSIDERATIONS.

Salesrooms of dealers in flowers and feathers appeared to have quite large stocks of imported flowers in the spring of 1920, but

retailers were not heavily stocked with imported goods. Dealers did not think that there had been a dumping of goods as had been anticipated; in fact, there is no indication of an oversupply. Buyers appear anxious to get imported flowers and are going abroad for them.

While American producers have improved the quality and style of their output since the beginning of the war, it is not at all certain that the improvement has been such as to permanently secure to them a larger share of the trade than before the war.

The American manufacturer faces the same labor problems as before the war; that is, labor will not remain permanently in the trade, wages are higher than formerly, and in addition, the cheap home labor is being eliminated to some extent. While home labor still exists, it is said to be higher priced in proportion to factory labor than before the war, because there are so many opportunities to earn better wages.

It has been commonly recognized in the trade that style and quality of workmanship are controlling factors in this industry and that cost of production and price are relatively less important factors. Until the American manufacturers create superior or more popular styles and turn out workmanship of equally high quality, the demand for imported flowers will probably persist whether the duty is high or low. The American manufacturer will probably never attempt to make the small flowers requiring so much patient hand labor.

The dependence of American fashions on foreign styles will also continue to influence the demand for imported goods. While conditions abroad are very unsettled and prices have been advancing materially, still it appears quite certain that the demand for imported flowers and feathers will be great and the competition from abroad will again become keen.

The domestic supply of common feathers for beds and pillows does not meet the demand

Statistical Tables.

Feathers, artificial flowers, and millinery ornaments[1]*—Production in United States.*

[From Federal census.]

Year.	Value.	Year.	Value.
1899	$6,293,000	1909	$23,980,000
1904	5,247,000	1914	19,065,000

[1] The statistics for artificial flowers and feathers and plumes are combined in this table. They are separately stated by States in the two tables following.

Artificial flowers [1]*—Production in United States—States.*

[From Federal census.]

States.	1909	1914
United States	$9,041,000	$7,614,000
States:		
California	.....	45,000
Illinois	.....	348,000
New Jersey	.....	79,000
New York	.....	6,181,000
Pennsylvania	.....	688,000
All other States [2]	.....	273,000

[1] Artificial flowers and feathers are stated separately by States.
[2] Includes: Florida, 1 establishment; Maryland, 3; Massachusetts, 1; Michigan, 1; Missouri, 3; Ohio, 1; Utah, 1; Wisconsin, 1.

Feathers and plumes [1]*—Production in United States—States.*

[From Federal census.]

States.	1909	1914
United States	$14,939,000	$11,451,000
States:		
California	.....	159,000
Illinois	.....	60,000
New York	.....	10,274,000
Pennsylvania	.....	787,000
All other [2]	.....	171,000

[1] Feathers and plumes and artificial flowers are stated separately by States, 1914.
[2] Include: Colorado, 2 establishments; District of Columbia, 1; Florida, 1; Georgia, 2; Iowa, 2; Maryland, 4; Nebraska, 1; New Hampshire, 3; Texas, 1; Utah, 2; Vermont, 2; Washington, 1.

Ostrich feathers (crude, dutiable)[1]*—Imports by countries.*

FISCAL YEARS.

Imported from—	1912	1913	1914	1915	1916	1917	1918
France	$51,870	$29,399	$118,082	$22,381	$2,028	$439	$2,746
England	2,263,138	3,706,610	2,326,769	1,245,458	677,657	88,183	6,432
Argentina	26,486	18,850	41,224	40,592	45,724	94,217	44,202
Brazil	4,951	6,984	6,569	5,570	734	327	3,276
Uruguay	15,440	16,379	9,986	63,843	33,108	17,589	11,751
British South Africa	1,444,018	2,471,602	1,431,146	798,659	1,435,535	334,141	673,347
All other	793	2,474	11,152	6,668	18,994	25	4,955
Total	3,806,696	6,252,298	3,944,928	2,183,171	2,195,497	534,921	746,709

CALENDAR YEARS.

Imported from—	1919	1920
France	$45,175	.....
England	321,116	.....
Argentina	140,108	.....
Uruguay	37,104	.....
British South Africa	2,147,383	.....
All other	7,260	.....
Total	2,698,146	$1,088,111

[1] Included in "All other feathers and downs, crude, etc.," prior to 1912.

All other feathers and downs, crude [1]*—Imports by countries.*

FISCAL YEARS.

Imported from—	1910	1911	1912	1913	1914	1915
France	$877,772	$477,183	$721,422	$1,299,928	$538,471	$103,383
Germany	89,362	91,056	102,567	139,108	128,391	69,364
England	4,390,909	3,486,472	284,117	228,193	51,795	51,051
Mexico	24,735	22,354	7,063	17,663	5,642	4
China	63,946	26,399	33,637	74,038	59,973	46,807
Hongkong	100	17,950	16,372	50,446	77,846	10,626
All other	1,666,954	1,744,416	63,467	175,708	64,617	38,217
Total	7,113,778	5,865,830	1,228,645	1,985,084	926,735	319,452

Imported from—	1916	1917	1918
France	$153,376	$384,586	$262,998
Germany	7,456	.....	.....
England	37,314	59,948	1,596
Mexico	8	.....	.....
China	262,425	408,753	761,917
Hongkong	.....	22,869	125,866
All other	65,075	68,139	60,094
Total	525,654	944,295	1,212,471

CALENDAR YEARS.

Imported from—	1919	1920	Imported from—	1919	1920
France	$293,020	.....	British South Africa	$2,082	.....
England	12,991	.....	Argentina	58,826	.....
China	386,681	.....	All other	16,875	.....
Hongkong	76,046	.....	Total	852,810	$1,508,936
Japan	6,289	.....			

[1] Ostrich feathers included prior to 1912.

Feathers and downs, dressed or manufactured, not suitable for millinery ornaments (dutiable)—Imports by countries.

FISCAL YEARS.

Imported from—	1910	1911	1912	1913	1914	1915	1916	1917	1918
Austria-Hungary	$6,526	$82,241	$29,042	$12,608	$11,651	$11	.....	.....	.....
France	1,304,196	974,413	956,191	1,151,984	611,509	9,858	$11,399	$15,227	$24,340
Germany	664,625	349,257	358,473	511,298	176,823	5,707	12	.....	.....
Japan	158	679	1,037	637	7,778	6,489	5,818	9,430	11,964
All other	19,319	17,601	11,319	25,391	13,780	4,852	4,069	12,217	8,228
Total	1,994,724	1,424,191	1,356,062	1,701,918	821,541	26,917	21,298	36,874	44,532

CALENDAR YEARS.

Imported from: France, in 1919, $27,511; Japan, $1,321; all other, $5,224; total, $34,056. 1920, total, $56,060.

Millinery ornaments, feathers, flowers, fruits, etc. (dutiable)—Imports by countries.

FISCAL YEARS.

Imported from—	1910	1911	1912	1913	1914	1915
Austria-Hungary	$208,056	$80,795	$101,954	$135,477	$120,468	$86,019
France	1,422,397	1,053,623	802,764	1,124,900	1,436,887	1,503,608
Germany	1,232,068	1,391,571	1,154,513	1,416,929	1,514,953	1,385,960
England	8,465	10,916	7,071	16,027	12,442	16,086
Japan	4,505	7,879	15,041	19,119	20,966	26,931
All other	8,060	10,539	7,283	10,031	26,256	18,132
Total	2,883,551	2,555,323	2,088,626	2,722,483	3,131,972	3,036,736

Imported from—	1916	1917	1918
Austria-Hungary	$2,264	.....	.....
France	1,946,392	$1,848,531	$929,449
Germany	47,558	2,396	.....
England	10,308	2,617	1,181
Japan	58,469	72,089	66,882
All other	23,231	13,854	15,997
Total	2,088,222	1,939,487	1,013,509

CALENDAR YEAR.

Imported from—	1919	Imported from—	1919	1920
Austria-Hungary	$13,278	Japan	$66,142	.....
France	1,717,495	All other	9,877	.....
Germany	46,817			
England	2,630	Total	1,856,239	$3,270,257

Feathers, artificial flowers, and millinery ornaments—Imports for consumption—Revenue.[1]

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
1907	15 and 50 per cent.	.....	$9,601,195	$3,216,486	.....	33.50
1908	.....do.....	.....	10,670,042	3,815,668	.....	35.76
1909	.....do.....	.....	11,619,793	3,885,377	.....	33.44
1910	15 to 20 per cent; 50 to 60 per cent.	.....	12,043,595	4,310,117	.....	35.79
1911	20, 40, and 60 per cent.	.....	9,786,392	3,531,961	.....	36.09
1912	.....do.....	.....	8,486,771	3,099,791	.....	36.53
1913	.....do.....	.....	12,442,328	4,241,821	.....	34.09
1914	.....do.....	.....	8,902,281	3,358,918	.....	37.73
1915	.....do.....	.....	5,546,539	2,321,205	.....	41.85
1916	.....do.....	.....	4,607,088	1,812,440	.....	39.34
1917	.....do.....	.....	3,675,671	1,519,826	.....	41.35
1918	.....do.....	.....	2,692,621	971,793	.....	36.09
1919	.....do.....	.....	3,686,299	1,036,914	.....	28.12
1920	.....do.....	.....	5,468,470	1,984,764	.....	36.47
1920[2]	.....do.....	.....	5,609,787	2,282,830	.....	40.69
1921[3]	.....do.....	.....	2,527,256	998,426	.....	39.51

[1] Includes all dutiable feathers and millinery ornaments.
[2] Calendar year.
[3] Six months ended June 30, 1921.

Feathers and flowers—Imports for consumption—Classified.[1]

DUTIABLE.

Fiscal year.	Feathers for beds.	Ostrich feathers.		Other feathers.			Quills and manufactures of down.	Fruits, grains, leaves, flowers, and stems.	Boas, boutonnières, wreaths, etc., of flowers or feathers.
		Crude.	Suitable for millinery.	Crude.	Suitable for millinery, manufactured.	Manufactured, not for millinery.			
1907	$108,352	$3,601,291	$1,146	$813,475	$1,705,703	.....	$1,689	$3,366,803	.....
1908	6,921	3,567,051	1,097	765,532	2,752,743	.....	1,618	3,573,614	.....
1909	3,049	4,293,915	2,293	1,200,135	2,682,842	.....	1,056	3,435,048	.....
1910	34,440	5,744,042	8,643	1,277,350	1,974,883	.....	8,378	2,981,101	$13,189
1911	36,316	5,009,168	4,610	803,424	1,516,765	.....	856	2,362,902	51,575
1912	37,853	3,794,592	53,908	1,148,057	1,321,014	.....	5,568	2,082,947	42,671
1913	38,967	6,200,174	6,829	1,820,511	1,670,070	.....	7,099	2,669,864	29,257
1914	45,357	3,866,428	{28,021 6,955	}1,028,152	{728,971 730,929	}$19,482	13,237	{586,783 1,828,738	} 18,767
1915	19,857	2,173,740	21,479	314,023	1,012,550	14,327	3,887	1,977,544	9,069
1916	218,998	1,849,921	7,198	300,945	1,030,109	14,559	4,295	1,174,166	6,679
1917	442,722	795,300	32,998	455,662	1,014,271	35,406	5,107	887,105	7,100
1918	490,204	465,359	32,787	643,043	596,308	37,101	4,584	429,126	4,109
1919	190,210	1,171,053	14,137	316,072	532,515	8,911	7,906	575,028	36,184
1920	463,953	1,336,916	16,335	878,711	498,090	42,076	13,974	2,333,329	26,383
1921[3]	138,148	818,036	5,725	328,601	94,193	16,059	3,970	1,103,834	18,690

[1] Shipments from Philippine Islands, free, omitted, but are negligible. Imports from Cuba also omitted, but are negligible.
[2] Calendar year.
[3] Six months ended June 30, 1921.

Feathers—Domestic exports (fiscal years).

Exported to—	1910	1911	1912	1913
Denmark	$39,152	$20,017	$47,024	$65,060
France	47,000	38,071	22,036	29,075
Germany	25,573	4,856	20,354	90,679
Italy	51,607	10,119	7,060	36,568
Netherlands	26,781	18,340	21,531	47,442
England	13,967	5,960	16,488	19,355
Canada	71,890	114,539	195,991	277,483
Cuba	5,003	4,072	5,155	5,264
All other	31,811	34,932	34,054	119,686
Total	312,784	250,906	369,693	690,612

Exported to—	1914	1915	1916	1917	1918	1919[1]	1920[1]
Denmark	$70,684	$34,103	$21,586	$7,495	$16,175	$271,057	.....
France	31,690	833	11,133	49,465	6,266	89,248	.....
Germany	110,075	2,561	.....	.....	.....	3,272	.....
Italy	40,192	4,196	.....	.....	.....	.....	.....
Netherlands	70,112	1,866	24,506	3,710	.....	17,092	.....
England	66,257	72,603	41,687	16,706	500	85,200	.....
Canada	203,442	143,313	175,635	187,145	225,684	330,237	.....
Cuba	6,903	8,930	9,455	34,694	20,364	13,508	.....
All other	40,665	13,401	28,111	69,647	33,247	53,636	.....
Total	640,020	281,806	312,113	368,862	302,236	863,250	$678,644

[1] Calendar year.

Artificial and ornamental flowers and feathers—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	429	Feathers of all kinds, crude or not dressed, colored or manufactured.	25 per cent ad valorem.
1883	429	When dressed, colored, or manufactured, including dressed and finished birds, for millinery ornaments and artificial and ornamental feathers and flowers, or parts thereof, of whatever material composed, for millinery use, not specially enumerated or provided for in this act.	50 per cent ad valorem.
1883	650	Bed feathers and downs	Free.
1883	652	Birds, stuffed	Do.
1890	443	Feathers and downs of all kinds, crude or not dressed, colored, or manufactured, not specially provided for in this act.	10 per cent ad valorem.
1890	443	When dressed, colored, or manufactured, including quilts of down and other manufactures of down, and also including dressed and finished birds suitable for milinery ornaments, and artificial and ornamental feathers and flowers, or parts thereof, of whatever material composed, not specially provided for in this act.	50 per cent ad valorem.
1890	504	Birds, stuffed, not suitable for millinery ornaments, and bird skins, prepared for preservation, but not further advanced in manufacture.	Free.
1890	567	Feathers and downs for beds	Do.
1894	328	Feathers and downs of all kinds, when dressed, colored or manufactured, including quilts of down and other manufactures of down, and also including dressed and finished birds suitable for millinery ornaments and artificial and ornamental feathers, fruits, grains, leaves, flowers, and stems, or parts thereof, of whatever material composed, suitable for millinery use, not specially provided for in this act.	35 per cent ad valorem.
1894	400	Bird skins, prepared for preservation, but not further advanced in manufacture.	Free.
1894	477	Feathers and downs for beds, and feathers and downs of all kinds, crude or not dressed, colored, or manufactured, not specially provided for in this act.	Do.
1897	425	Feathers and downs of all kinds, including bird skins or parts thereof with the feathers on, crude or not dressed, colored, or otherwise advanced or manufactured in any manner, not specially provided for in this act.	15 per cent ad valorem.
1897	425	When dressed, colored, or otherwise advanced or manufactured in any manner, including quilts of down and other manufactures of down, and also dressed and finished birds suitable for millinery ornaments, and artificial or ornamental feathers, fruits, grains, leaves, flowers, and stems, or parts thereof, of whatever material composed, not specially provided for in this act.	50 per cent ad valorem.
1897	493	Birds, stuffed, not suitable for millinery ornaments	Free.
1909	438	Feathers and downs of all kinds, including bird skins or parts thereof with the feathers on, crude or not dressed, colored, or otherwise advanced or manufactured in any manner, not specially provided for in this section.	20 per cent ad valorem.
1909	438	When dressed, colored, or otherwise advanced or manufactured in any manner, including quilts of down and other manufactures of down, and also dressed and finished birds suitable for millinery ornaments, and artificial or ornamental feathers, fruits, grains, leaves, flowers, and stems, or parts thereof, of whatever material composed, not specially provided for in this section.	60 per cent ad valorem.
1909	438	Boas, boutonnieres, wreaths, and all articles not specially provided for in this section, composed wholly or in chief value of any of the feathers, flowers, leaves, or other materials or articles herein mentioned.	Do.
1909	509	Birds, stuffed, not suitable for millinery ornaments	Free.
1913	347	Feathers and downs, on the skin or otherwise, crude or not dressed, colored, or otherwise advanced or manufactured in any manner, not specially provided for in this section.	20 per cent ad valorem.
1913	347	When dressed, colored, or otherwise advanced or manufactured in any manner, and not suitable for use as millinery ornaments, including quilts of down and manufactures of down.	40 per cent ad valorem.
1913	347	Artificial or ornamental feathers suitable for use as millinery ornaments, artificial and ornamental fruits, grains, leaves, flowers, and stems, or parts thereof, of whatever material composed, not specially provided for in this section.	60 per cent ad valorem.
1913	347	Boas, boutonnieres, wreaths, and all articles not specially provided for in this section, composed wholly or in chief value of any of the feathers, flowers, leaves, or other material herein mentioned. *Provided*, That the importation of aigrettes, egret plumes or so-called osprey plumes, and the feathers, quills, heads, wings, tails, skins, or parts of skins, of wild birds, either raw or manufactured, and not for scientific or educational purposes, is hereby prohibited; but this provision shall not apply to the feathers or plumes of ostriches, or to the feathers or plumes of domestic fowls of any kind.	Do.

COURT AND TREASURY DECISIONS.

"Artificial" for tariff purposes is substantial simulation of the natural. (United States *v.* Dieckerhoff, Raffloer & Co., 4 Ct. Cust. Appls., 384, of 1913.) An exact imitation is not essential. Thus dyed straw millinery ornaments, crudely resembling "fruits, grains, leaves, flowers, and stems, or parts thereof," were held to come within paragraph 347; but articles composed of strips of colored straw and not resembling any of the things named in paragraph 347 were held dutiable as unenumerated manufactured articles under paragraph 385. (Johnson *v.* United States, 10 Ct. Cust. Appls., T. D. 38333, of 1920.) It is not necessary that the articles should truly represent fruits, grains, leaves, flowers, or stems. It is sufficient if they simulate natural fruits, leaves, flowers, and stems in physical characteristics and appearance closely enough to cause them in common understanding to be regarded as leaves, stems, flowers, or fruits produced not by nature but by the hand of man, and at the same time are appropriate and suitable to be used for those purposes of ornamentation to which the natural products may be temporarily devoted. Millinery ornaments consisting of clusters of black straw wound into the form of berries or grapes and set on black straw leaves attached to stems made of black straw and metal; and millinery ornaments consisting of sprays of black straw leaves and black straw roses sewed with black threads to a stiff fabric foundation were held properly classified as "artificial and ornamental fruits, grains, leaves, flowers, and stems"; but millinery ornaments in chief value of straw and not in imitation of fruits, grains, leaves, flowers, and stems were held dutiable as manufactures in chief value of straw in "its natural state" under paragraph 368, or if in chief value of dyed straw, as manufactures not provided for under paragraph 385. Dyed straw was furthermore held not in its "natural state" within paragraph 368, and millinery ornaments so crudely and grotesquely fashioned as to be scarcely deserving of the description ornamental and not resembling fruits, grains, leaves, flowers, and stems were held not classable under paragraph 347. (Cochran Co. *v.* United States, 10 Ct. Cust. Appls., T. D. 38336, of 1920.) Ivory brooches, pendants, and scarf-pins carved in imitation of various flowers were held dutiable as manufactures of ivory under paragraph 369, rather than as artificial and ornamental flowers under paragraph 347. (United States *v.* Darling, 10 Ct. Cust. Appls., T. D. 38334, of 1920, followed in Abstract 43739.) In another case articles of straw and chip in natural colors, too fragile and crude to be used as millinery ornaments but imported as raw material for making them, and not resembling fruits, grains, leaves, flowers, and stems, or parts thereof, were held excluded from paragraph 347, it being declared that not every bended straw or twisted shaving can amount to an artificial and ornamental flower or leaf within that paragraph. Split straw and chip material for the manufacture of millinery ornaments, too crude for classification under paragraph 347, fall within paragraph 368 as manufactures of chip and straw. (Isler *v.* United States, 10 Ct. Cust. Appls., T. D. 38339, of 1920; followed in Abstract 43745, of 1920, as to split straw in its natural condition and chip braided or twisted into shapes resembling in a crude way fruits, stems, or flowers.)

Under the act of 1913 the articles must be both artificial and ornamental. (Bayersdorfer & Co. *v.* United States, 7 Ct. Cust. Appls., 66, of 1916.) The words "artificial and ornamental" modifying the word "fruits," etc., in this paragraph refer to the per se character and not to the intended use of the articles. This is shown by the fact that feathers in various physical conditions are dutiable at one rate and "artificial or ornamental feathers suitable for use as millinery ornaments" at another rate. (Morimura Bros. *v.* United States, 8 Ct. Cust. Appls., 111, of 1917.)

Dried and dyed immortelles were held to come within paragraph 210 of the act of 1913, directly or by similitude, as preserved cut flowers and not as artificial and ornamental flowers under paragraph 347. (Bayersdorfer *v.* United States, 7 Ct. Cust. Appls., 66, of 1916; Rice *v.* United States, 10 Ct. Cust. Appls., ——, T. D. 38403, of 1920.) Wreaths of dried and dyed immortelles with straw frames, the frames being of minor value, were held by virtue of the mixed material clause in paragraph 386 of the act of 1913 dutiable at the same rate as preserved cut flowers. (Bayersdorfer *v.* United States, 7 Ct. Cust. Appls., 66.)

The following articles have been held to come within paragraph 347 of the act of 1913:

Artificial and ornamental pears and apples, chiefly used as pincushions. (Morimura *v.* United States, 8 Ct. Cust. Appls., 111, of 1917.) Goose skins dressed with down on them not suitable for millinery ornaments, as "downs on the skin * * * dressed." (United States *v.* Herskovits, 8 Ct. Cust. Appls., 203, of 1917.) Leaves and flowers for millinery ornaments made of straw which has been dyed, but the fibers of which have not been separated. (United States *v.* Gage, 8 Ct. Cust. Appls., 306; United States *v.* International Forwarding Co., id., 378; United States *v.* Rosenthal-Sloan, id., 380, of 1918.) Carved ivory flowers. (Abstract 41375, of 1917.) Artificial flowers made of beads. (United States *v.* American Bead Co., 9 Ct. Cust. Appls., ——, T. D. 38044, of 1919.) Dried skins of chicks and ducklings with the heads and feet attached, stuffed with cotton, fitted with bead eyes, and wired so as to give them a natural appearance and having a wire attachment apparently for the purpose of fastening them to other objects as decorations as "downs on the skin * * * dressed." (Morimura *v.* United States, 7 Ct. Cust. Appls., 378, of 1917.) Skins of ducklings or chicks, which skins have been dried and stuffed with cotton medicated with some preservative, same classification. (Morimura *v.* United States, 6 Ct. Cust. Appls., 183, of 1915.) Straw hats trimmed with silk, artificial flowers, and ornamental feathers, flowers and feathers predominating. (Aitken, Son & Co. *v.* United States, 6 Ct. Cust. Appls., 232, of 1915.)

Colored feathers fastened upon white cards in the shape of birds, used to decorate walls in the same manner as pictures, are articles of feathers and not feathers within this paragraph. (United States *v.* Beach, 8 Ct. Cust. Appls., 365, of 1918.) Mounted birds, not suitable for use as millinery ornaments, are dutiable at 40 per cent under this paragraph. (T. D. 36184, of 1916.) Down-filled silk quilts, silk the component material of chief value, are dutiable as manufactures of silk under paragraph 318, and not as quilts of down under this paragraph. (United States *v.* Altman & Co., 8 Ct. Cust.

Appls., 148, of 1917.) Flues of feathers, obtained by stripping one side of the goose quill, were held dutiable at 20 per cent rather than at 40 per cent under this paragraph. (United States *v.* Massee & Co., 9 Ct. Cust. Appls., ——, T. D. 38214, of 1919.)

Regulations governing the importation of plumage are contained in articles 537 and 538 of the Customs Regulations of 1915, and T. D. 33781, 33799, 33810, 33944, of 1913; 34057, 34518, 34748, 34886, 34913, of 1914; 35307, of 1915; 36322, 36382, of 1916; 37422, of 1917; and 37660, of 1918.

While downs were enumerated in the first part of this paragraph, they are not mentioned in the prohibitory clause, and downs of wild birds are accordingly permitted entry. Beaks of wild birds, however, while not mentioned, are nevertheless excluded, as being within the term "heads."

MISCELLANEOUS.

Summary of the industry.

[Abstract of the Census of Manufactures, 1914.]

	Feathers and plumes.		Artificial flowers.	
	1909	1914	1909	1914
Number of establishments	187	239	225	217
Wage earners (average number)	5,181	4,483	4,835	4,808
Capital	$6,100,000	$5,396,000	$3,593,000	$3,349,000
Wages	2,234,000	1,988,000	1,740,000	1,991,000
Cost of materials	9,010,000	6,103,000	4,618,000	3,207,000
Value of products	14,939,000	11,451,000	9,041,000	7,641,000
Value added by manufacture	5,929,000	5,348,000	4,423,000	4,407,000

Local concentration—Artificial flowers, feathers, and plumes—Value of products.

	1914	1909	1914	1909
			Per cent.	*Per cent.*
Total	$19,064,570	$23,980,567	.....	.....
New York State	16,455,637	21,162,385	86.3	88.2
New York City	16,348,118	21,098,226	85.8	88.0

Hours of labor per week, 1914.

Average number of wage earners in establishments where prevailing hours per week were as follows:

	Total.	48 hours and under.	48 to 54 hours.	54 hours.	54 to 60 hours.	60 hours.	60 to 72 hours.
Artificial flowers	4,808	714	2,239	1,685	112	39	19
Feathers and plumes	4,483	783	2,444	1,252	2	2	.....

Wage earners employed each month.

	Census 1914.			Census 1914.	
	Artificial flowers.	Feathers and plumes.		Artificial flowers.	Feathers and plumes.
Average number	4,808	4,183	August	4,486	4,662
January	4,572	4,285	September	5,247	5,391
February	4,807	4,784	October	5,382	4,856
March	5,137	4,725	November	5,418	4,051
April	5,162	4,628	December	5,412	3,829
May	1,331	4,288	Per cent minimum is of maximum	70.9	71.0
June	3,840	4,058			
July	3,902	4,239			

Average number of wage earners, by per cent and age—Artificial flowers and feathers and plumes, 1914.

Census year.	Total.	Average number.			Per cent of total.		
		16 and over.		Under 16 years.	16 and over.		Under 16 years.
		Male.	Female.		Male.	Female.	
1914	9,291	1,347	7,564	380	14.5	81.4	4.1
1909	10,016	1,317	8,387	312	13.1	83.7	3.1
1904	4,343	604	3,545	194	13.9	81.6	4.5

Character of ownership, 1914.

	Establishments.			Wage earners.			Value of products.		
	Independent.	Corporation.	Other.	Independent.	Corporation.	Other.	Independent.	Corporation.	Other.
Artificial flowers	137	33	47	1,697	1,339	1,772	$2,701,000	$2,148,000	$2,765,000
Feathers and plumes	133	47	59	1,439	1,427	1,617	3,699,000	3,669,000	4,083,000

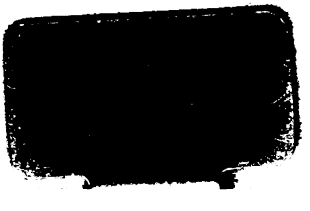
Classified by value of products, 1914.

	Flowers.			Feathers.		
	Number.	Wage earners.	Value.	Number.	Wage earners.	Value.
Less than $5,000	55	87	$124,000	48	84	$126,000
$5,000 to $20,000	75	676	815,000	63	365	686,000
$20,000 to $100,000	65	1,908	2,996,000	93	1,657	4,111,000
$100,000 to $1,000,000	22	2,137	3,679,000	35	2,377	6,529,000

Establishments classified by number of wage earners, 1914.

	Artificial flowers.	Feathers and plumes.
Establishments	217	220
Average number of wage earners	4,808	4,483
No wage earners	15	11

	Artificial flowers.			Feathers and plumes.		
	Number.	Wage earners.	Per cent of total.	Number.	Wage earners.	Per cent of total.
1 to 5 wage earners	72	197	4.1	81	220	4.9
6 to 20 wage earners	61	729	15.2	84	978	21.8
21 to 50 wage earners	47	1,503	31.2	42	1,424	31.8
51 to 100 wage earners	11	772	16.1	14	951	21.2
101 to 250 wage earners	11	1,607	33.4	6	910	20.3



UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPHS 344, 345, and 346 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

Paragraph 344:
Fireworks

Paragraph 345:
Matches

Paragraph 346:
Cartridges, Loaded and Empty, and Percussion Caps
Blasting Caps
Safety Fuses

Paragraph 521:
Joss Stick or Joss Light

Paragraph 608:
Spunk

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and index" the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of C. R. De Long, of the Chemical Division, with relation to matches, and Sandford L. Willis, of the Metals Division, with relation to cartridges, of the Commission's staff, and of others.

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FIREWORKS.

General Information.

1913 tariff paragraph.—344. Firecrackers of all kinds, 6 cents per pound; bombs, rockets, Roman candles, and fireworks of all descriptions, not specially provided for in this section, 10 cents per pound; the weight on all the foregoing to include all coverings, wrappings, and packing material.

Domestic production.—In 1914 there were 41 manufacturers, with a capital of $2,162,449 and an output valued at $2,296,236.

"Display fireworks of all kinds are the principal manufactures of establishments in this classification (fireworks); among specific products are air torpedoes, bombs, mines, set pieces, shells, wheels, torches, rockets, colored fire, lands, electric sparklers, firecrackers, paper balloons, and roman candles." [1]

Materials.—The materials most used in fireworks are gunpowder or its constituents, carbon, sulphur, and potassium nitrate. Fireworks are so varied in form that many substances may be employed in their manufacture. Metallic salts are used to produce different colors; several oxidizing materials may supplant potassium nitrate and other explosives may replace gunpowder for certain purposes. Powdered aluminum, dextrine, and copper-covered wire are used in the manufacture of sparklers. Besides their scenic purposes, rockets, Roman candles, and Bengal lights are also used for signaling at sea.

Imports and exports.—Imports by countries are not separately stated in official statistics, but practically all firecrackers imported into the United States come from China and Japan. Other fireworks were imported principally from Germany and France. Imports of bombs, rockets, etc., for the five-year period, 1910–1914, averaged 65,000 pounds, valued at $8,000, with revenue of $7,000, and those of firecrackers 3,390,000 pounds, valued at $216,000, with revenue of $254,000. Imports for the calendar year 1920 were: Bombs, rockets, etc., 14,987 pounds, valued at $4,071, with revenue of $1,499; firecrackers, 4,169,224 pounds, valued at $740,985, with revenue of $250,153.

Tariff history.—The acts of 1883 and 1894 imposed an ad valorem duty of 100 and 50 per cent, respectively, on the importation of firecrackers. A specific duty of 8 cents per pound was imposed by the acts of 1890, 1897, and 1909. The act of 1913 reduced the rate to 6 cents per pound.

Bombs, rockets, Roman candles, and fireworks were specifically provided for in the acts of 1909 and 1913. The former act imposed a duty of 12 cents per pound and the latter 10 cents per pound.

[1] Abstract of the Census of Manufactures, 1914.

Production in United States—States—Fireworks.

[From Federal census.]

Year and State.	Number of establishments.	Wage earners (average number).	Capital.	Wages.	Cost of materials.	Value of products.
			Expressed in thousands.			
United States:						
1914	41	1,324	$2,162	$616	$1,206	$2,296
1909	42	1,403	2,209	579	896	2,269
1904	34	1,480	1,543	536	769	1,987
1899	46	1,638	1,086	507	628	1,785
1889	22	518	507	165	189	593
1879 [1]	39	735	580	216	841	1,391
1869 [1]	21	363	600	196	307	880
1859 [2]	12	144	85	40	49	177
States, 1914:						
Massachusetts	4	389	346	180	284	554
Pennsylvania	6	57	93	36	47	131
All other States	31	878	1,723	400	875	1,611

[1] Explosives and fireworks. [2] "Fireworks," "torpedoes."

Imports for consumption—Revenue—Fireworks.

Fiscal year.	Rates of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
				Per cent.
1908	20 per cent	$86,343	$17,268	20.00
1909	do	52,453	10,490	20.00
1910	do	892	178	20.00

Imports for consumption—Revenue.

BOMBS, ROCKETS, ROMAN CANDLES, AND FIREWORKS OF ALL DESCRIPTIONS N. S. P. F.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:		*Pounds.*				*Per cent.*
1910	12 cents per pound.	74,067	$9,850	$8,888	$0.133	90.23
1911	do	29,066	3,377	3,488	.116	103.29
1912	do	16,939	3,221	2,032	.190	63.05
1913	do	19,467	3,229	2,336	.166	72.35
1914	do	8,001	1,526	960	.191	62.92
1914	10 cents per pound.	177,513	18,711	17,751	.105	94.87
1915	do	38,575	6,134	3,857	.159	62.88
1916	do	19,543	3,719	1,954	.190	52.55
1917	do	25,587	4,474	2,558	.174	57.19
1918	do	4,068	446	406	.109	91.21
Calendar year:						
1919	do	5,278	1,251	528	.237	42.19
1920	do	14,987	4,071	1,499		36.81
1921 [1]	do	15,505	2,188	1,550		

FIRECRACKERS.

Fiscal year:						
1908	8 cents per pound.	5,421,504	$394,045	$433,720	$0.073	110.07
1909	do	4,864,638	305,653	389,171	.063	127.36
1910	do	3,949,261	252,645	315,940	.064	125.05
1911	do	3,150,291	201,817	252,023	.064	124.87
1912	do	3,037,873	194,224	243,029	.064	125.13
1913	do	3,090,450	208,740	247,236	.068	118.44
1914	do	29,155	1,799	2,332	.062	129.65
1914	6 cents per pound.	3,514,312	220,618	210,858	.063	95.58
1915	do	2,601,022	163,140	156,061	.062	95.66
1916	do	3,284,153	254,318	197,049	.077	77.48
1917	do	2,999,503	382,248	179,970	.127	47.08
1918	do	1,117,004	123,087	67,020	.110	54.45
Calendar year:						
1919	do	1,683,244	280,237	100,995	.167	36.04
1920	do	4,169,224	740,935	250,153		33.76
1921 [1]	do	3,813,300	458,477	228,698		

[1] 6 months ending June 30, 1921.

Rates of duty—Fireworks.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	431	Firecrackers of all kinds	100 per cent ad valorem.
1890	438	Firecrackers of all kinds, but no allowance shall be made for tare or damage thereon.	8 cents per pound.
1894	323	....do	50 per cent ad valorem.
1897	420	Firecrackers of all kinds, the weight to include all coverings, wrappings, and packing material.	8 cents per pound.
1909	433	Firecrackers of all kinds	Do.
		Bombs, rockets, roman candles, and fireworks of all descriptions, not specially provided for in this section. The weight on all the foregoing to include all coverings, wrappings, and packing material.	12 cents per pound.
1913	344	Firecrackers of all kinds	6 cents per pound.
		Bombs, rockets, Roman candles, and fireworks of all descriptions, not specially provided for in this section. The weight on all the foregoing to include all coverings, wrappings, and packing materials.	10 cents per pound.

Court and Treasury Decisions.

Shells made of paper containing a charge of explosive which after importation are equipped with a fuse, a cone, powder, or other means of propelling the shells through the air, were held to be fireworks. (Abstract 41751 of 1918.) Shells containing no explosive are not fireworks. (Abstract 33162, T. D. 33660, of 1913.)

MATCHES.

[Par. 345, act of 1913.]

GENERAL INFORMATION.

Tariff act of 1913.—PAR. 345. Matches, friction or lucifer, of all descriptions, per gross of one hundred and forty-four boxes, containing not more than one hundred matches per box, 3 cents per gross; when imported otherwise than in boxes containing not more than one hundred matches each, ½ of 1 cent per one thousand matches; wax matches, fusees, wind matches, and all matches in books or folders or having a stained, tipped, or colored stick or stem, and vestas consisting of a wick coated with an inflammable substance, and night lights, 25 per centum ad valorem: *Provided*, That in accordance with section ten of "An act to provide for a tax upon white phosphorus matches, and for other purposes," approved April ninth, nineteen hundred and twelve, white phosphorus matches manufactured wholly or in part in any foreign country shall not be admitted to enter at any of the ports of the United States, and the importation thereof is hereby prohibited: *Provided further*, That nothing in this act contained shall be held to repeal or modify said act to provide for a tax upon white phosphorus matches, and for other purposes, approved April ninth, nineteen hundred and twelve.

Description.—Matches may be divided into three classes for purpose of description: (1) Friction matches, single dip; (2) friction matches, double dip; and (3) safety matches.

The first two classes will strike on any surface by friction, while the third type, or safety match, must be struck on the side of the box which has been prepared with a mixture of phosphorus sesquisulphide and some abrasive material. In the single-dip match the necessary materials are all mixed together and put on in one dipping; in the double-dip matches the first coat contains an oxidizing agent, such as potassium chlorate, glue, and an inert filler, such as clay. The second dip, or tip of the match, contains the highly inflammable substance, such as phosphorus sesquisulphide, and an abrasive material, such as flint or ground glass. The double-dip match is probably used more in the United States than any other kind of match. The advantage of this match is that it prevents the dangerous dead- and is safer from fire hazard and for transportation.

Materials.—The ordinary match is composed of a mixture of the four following classes of materials: (1) An easily inflammable material, such as phosphorus sesquisulphide or antimony sulphide; (2) an oxidizing agent, such as potassium or sodium chlorate, red lead, or manganese dioxide; (3) inert materials, as an abrasive, such as ground glass or flint, and coloring matters; (4) glue or some adhesive gum for the purpose of causing the head to adhere to the stick and to exclude the air from the head of the match.

The match stick is usually impregnated with paraffin wax to make it ignite readily, and in recent years it has become the practice to also impregnate the stick with some chemical, usually sodium phosphate. The wood used for match stems in the United States is usually that of the white pine, while in European and Asiatic countries, the Russian aspen is used.

Method of manufacture.—The manufacture of matches has been developed to the point where it is a continuous mechanical operation requiring comparatively little labor. The perfectly dried blocks of wood are cut into lengths of 2⅜ inches and are then fed into automatic cutting machines. These machines cut about 40 match splints at one stroke and these are forced automatically into openings in a perforated iron plate which is in continuous movement. The match splints after being forced into the plate are conveyed over a series of heaters and then through an arrangement which forces out any imperfect splints. The plates now pass over a trough of paraffin wax in such a manner that about one-fourth of the stick becomes impregnated. The matches now pass over a composition roller where the first dip is put on. In order that the first dip may have time to dry, the plates are made to travel up and down through a series of wheels and are then given a second dip. The finished match is now carried back toward the end where the blocks were first punched. Sufficient time elapses for the matches to dry. Here, the matches are automatically punched out from the traveling belt and automatically packed in boxes of the desired number.

According to Rogers,[1] the machine used for the double-dip matches is 96 feet long, contains 1,600 plates, takes one hour for the complete operation, and makes 8,000,000 matches in 10 hours.

The manufacture of matches requires careful control of atmospheric conditions. The air in the match-making room is usually purified and kept within fixed limits of temperature and humidity. This is necessary for the proper dipping and drying of the matches. Also this careful control makes a more desirable atmosphere for the workmen necessary to operate the machines.

Output.—According to the 1914 census there were 20 establishments engaged in the manufacture of matches, employing 3,800 wage earners, with a capital of $11,736,187 and an output of matches valued at $12,500,000. It is estimated that the production in the United States in 1917 amounted to 28,805,000 gross boxes of matches.

Domestic export.—Prior to 1915 the domestic export of matches was between $80,000 and $100,000. About 50 per cent of the export was to Canada. During the period from 1915 to 1918, inclusive, the domestic export of matches was fairly constant at between $430,000 and $500,000. During this period France was the principal consumer. During the 1919 calendar year exports increased to $626,780, and in 1920 amounted to $514,592.

Laws relating to the match industry.—Formerly matches made in the United States contained ordinary white or yellow phosphorus. The constant handling of this material in match factories by workmen led to the so-called "phosy jaw." The passage of the Esch-Hughes Act in 1912 prohibited the importation of white phosphorus

[1] Rogers, Allen, "Manual of Industrial Chemistry," 3d edition, p. 256.

Production in United States—Matches.[1]

United States.	Number of establishments.	Wage earners.	Capital.	Wages.	Cost of materials.	Value of products.
			Expressed in thousands.			
1914	[2] 20	3,800	$11,736	$1,758	$5,202	$12,556
1909	26	3,631	11,953	1,390	4,599	11,353
1904	23	3,185	5,334	1,101	3,285	5,647
1899	22	2,047	3,893	613	3,421	6,006
1889	27	1,696	1,941	474	935	2,194
1879	37	2,219	2,115	536	3,299	4,668
1869	75	2,556	1,522	617	1,180	3,540
1859	75	1,252	362	179	230	699
1849	60	1,021	109	155	138	428

[1] Data from Abstract of the Census of Manufactures, 1914.
[2] California, 3; Illinois, 2; Indiana, 1; Massachusetts, 1; Michigan, 1; Minnesota, 1; New Jersey, 1; New York, 3; Ohio, 4; Pennsylvania, 2; Wisconsin, 1.

Production of matches in Japan.[1]

Year.	Quantity.	Value.[2]	Year.	Quantity.	Value.[2]
	Gross boxes.			*Gross boxes.*	
1910	49,947,215	$6,296,336	1915	49,320,852	$11,351,241
1911	43,948,327	6,083,648	1916	50,612,996	13,863,054
1912	52,845,232	7,052,463	1917	52,531,551	16,484,466
1913	51,731,020	7,072,784	1918	48,364,435	19,785,046
1914	49,050,228	7,749,609			

[1] From Thirty-fifth Statistical Report of the Department of Agriculture and Commerce, Japan. About 80 per cent of the total production is "safety matches."
[2] Converted from yen at par value of $0.485.

Imports by countries—Matches.

FISCAL YEARS.

Imported from—	1910	1911	1912	1913	1914	1915	1916	1917	1918
Austria-Hungary	$30,956	$34,531	$39,153	$61,811	$91,118	$22,634	.....	.....	.....
Belgium	41,608	55,933	26,192	28,285	35,187	12,451	.....	.....	.....
Germany	36,819	66,456	20,664	28,994	49,651	25,293	.....	.....	.....
Norway	86,674	112,533	115,865	108,202	117,748	86,685	$89,315	$141,062	$573,566
Sweden	157,466	285,577	265,789	453,499	473,628	383,935	611,482	820,827	2,149,566
Japan	1,016	4,087	5,980	10,928	22,797	72,441	257,455	927,647	1,067,866
All other	18,406	29,090	36,503	37,851	92,666	80,379	16,253	41,877	.....
Total	372,945	588,209	510,146	730,170	882,795	662,820	975,605	1,969,968	3,856,961

CALENDAR YEARS.

	1918	1919	1920
Norway	$402,005	$46,202	.....
Sweden	2,299,045	377,995	.....
Japan	856,738	720,338	.....
All other	115,940	94,917	.....
Total	3,675,728	1,249,452	$912,126

Imports for consumption—Revenue—Matches, friction or lucifer.

IN BOXES CONTAINING NOT MORE THAN 100 MATCHES PER BOX.

[Under general tariff.]

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal years:		*Gross.*				*Per cent.*
1908	8 cents per gross	775,020	$195,797	$62,091	$0.252	31.65
1909	do	1,371,045	335,273	108,682	.245	32.71
1910	do	105,031	25,242	8,402	.240	33.29
	6 cents per gross	1,355,792	328,789	81,347	.239	25.65
1911	do	2,369,534	537,721	141,572	.228	26.33
1912	do	2,028,287	441,122	121,697	.218	27.59
1913	do	3,042,440	647,104	182,698	.213	28.22
1914	do	756,826	156,040	45,349	.250	29.06
	3 cents per gross	3,186,942	646,618	95,428	.203	14.77
1915	do	2,663,208	618,916	78,898	.232	12.91
1916	do	2,948,628	891,295	88,458	.302	9.92
1917	do	5,310,579	1,861,043	159,587	.350	8.58
1918	do	6,604,360	2,316,761	198,130	.502	5.97
Calendar years:						
1918	do	4,952,331	2,044,714	148,570	.615	4.85
1919	do	1,611,618	897,314	48,349	.557	5.39
1920	do	1,644,673	937,632	49,340	.576	5.26

OTHER THAN IN BOXES CONTAINING NOT MORE THAN 100 MATCHES EACH.

Fiscal years:		*Thousands.*				
1908	1 cent per thousand	566,161	$23,372	$5,861	$0.039	25.07
1909	do	937,426	42,623	9,374	.047	21.49
1910	do	191,356	8,811	1,913	.046	21.72
	½ cent per thousand	199,655	8,530	1,497	.043	17.54
1911	do	569,879	37,632	4,274	.066	11.36
1912	do	58,604	4,285	440	.073	10.27
1913	do	180,674	7,155	1,355	.040	18.94
1914	do	248,982	7,664	1,866	.030	24.35
	½ cent per thousand	722,981	23,845	2,714	.033	11.39
1915	do	2,050	1,090	11	.357	1.05
1916	do	2,520	127	9	.050	7.44
1917	do	184	6	.....	.033	.....
1918	do	12	2	.....	.167	.....
Calendar years:						
1918	do	12	2	.....	.....	2.50
1919	do	11,564	2,885	43	.....	1.50
1920	do	204,142	29,515	765	.....	2.59

WAX AND FANCY MATCHES AND TAPERS. (Act of 1909.)

Fiscal years:						
1910	35 per cent	.....	$7,208	$2,522	.....	35.00
1911	do	.....	34,320	12,012	.....	35.00
1912	do	.....	60,226	21,079	.....	35.00
1913	do	.....	66,822	23,387	.....	35.00
1914	do	.....	1,790	626	.....	35.00

WAX AND WIND MATCHES AND ALL MATCHES IN BOOKS OR FOLDERS OR HAVING A STAINED, DYED, OR COLORED STICK OR STEM. (Act of 1913.)

Fiscal years:		*Packages.*				
1914	25 per cent	.....	$34,262	$856	.....	25.00
1915	do	.....	13,267	3,316	.....	25.00
1916	do	.....	6,991	1,747	.....	25.00
1917	do	.....	12,275	3,068	.....	25.00
1918	do	.....	21,005	5,251	.....	25.00
Calendar years:						
1918	do	.....	15,060	3,765	.....	25.00
1919	do	4,927,882	13,555	3,389	.....	25.00
1920	do	2,033,112	10,419	2,604	.....	25.00

Imports for consumption—Revenue—Matches, friction or lucifer—Continued.

TAPERS, FUSES, AND NIGHT LIGHTS. (Acts of 1913.)

	Rate of duty.	Quantity.	Value.	Duty collected.	Valur per unit of quantity.	Actual and computed ad valorem rate.
Fiscal years:		*Pounds.*				*Per cent.*
1914	25 per cent		$20,126	$5,031		25.00
1915	do		20,328	5,082		25.00
1916	do		11,017	2,754		25.00
1917	do		7,484	1,871		25.00
1918	do		6,032	1,508		25.00
Calendar years:						
1918	do		2,017	504		25.00
1919	do		4,076	1,019		25.00
1920	do		6,007	1,501		25.00

Domestic exports—Matches.

FISCAL YEARS.

Exported to—	1910	1911	1912
Canada	$33,736	$40,591	$50,816
Colombia	13,408	9,821	12,338
All other	33,733	26,694	
Total	80,877	77,106	92,851

Exported to—	1913	1914	1915
Canada	$63,778	$37,702	$20,321
Colombia	7,008	2,766	1,284
Honduras	11,009	11,623	12,558
Mexico	1,045	11,561	5,468
French West Indies			1,895
France			394,892
All other	19,567	14,084	38,438
Total	102,407	77,736	474,456

Exported to—	1916	1917	1918
Canada	$21,806	$44,198	$17,495
Honduras	13,233	15,784	28,162
Mexico	54,316	52,819	52,915
French West Indies	29,327	12,095	17,274
France	275,772	220,893	169,007
All other	102,665		
Total	497,119	430,650	471,385

CALENDAR YEARS.

Exported to—	1918	1919	1920
France	$98,776	$36,261	
Honduras	34,811	31,250	
Mexico	92,105	125,393	
French West Indies	41,404	29,190	
Peru	1,492	26,317	
British West Africa	14,657	24,660	
All other	197,795	353,709	
Total	481,130	626,780	$514,592

Rates of duty—Matches.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
[illegible]	[illegible]	Friction or lucifer matches of all descriptions	35 per cent ad valorem.
[illegible]	441	Matches, friction or lucifer, of all descriptions, per gross of one hundred and forty-four boxes, containing not more than one hundred matches per box.	10 cents per gross.
		When imported otherwise than in boxes containing not more than one hundred matches each.	1 cent per M.
[illegible]	[illegible]	Matches, friction or lucifer, of all descriptions	20 per cent ad valorem.
[illegible]	[illegible]	Matches, friction or lucifer, of all descriptions, per gross of one hundred and forty-four boxes, containing not more than one hundred matches per box.	8 cents per gross.
		When imported otherwise than in boxes containing not more than one hundred matches each.	1 cent per M.
[illegible]	[illegible]	Matches, friction or lucifer, of all descriptions, per gross of one hundred and forty-four boxes, containing not more than one hundred matches per box.	6 cents per gross.
		When imported otherwise than in boxes containing not more than one hundred matches each.	¾ cent per M.
		Wax and fancy matches and tapers	35 per cent ad valorem.
[illegible]	[illegible]	Matches, friction or lucifer, of all descriptions, per gross of one hundred and forty-four boxes, containing not more than one hundred matches per box.	3 cents per gross.
		When imported otherwise than in boxes containing not more than one hundred matches each.	⅜ cent per M.
		Wax matches, [illegible], wind matches, and all matches in books or folders or having a stained, dyed, or colored stick or stem, and [illegible] consisting of a wick coated with an inflammable substance [illegible] night lights.	25 per cent ad valorem.
		[illegible] That [illegible] accordance with section ten of "An act to [illegible] a tax upon white phosphorus matches, and for other purposes," approved April ninth, nineteen hundred and twelve, white phosphorus matches manufactured wholly or in part in any foreign country shall not be entitled to enter at any of the ports of the United States, and the importation thereof is hereby prohibited.	
		[illegible] That nothing in this act contained shall be [illegible] said act to provide for a tax upon white phosphorus matches, and for other purposes, approved April [illegible], nineteen hundred and twelve.	

[illegible] act to provide for a tax upon white phosphorus matches, and for other purposes, approved April [illegible].

Be it enacted by the Senate and House of Representatives of the United States of America in Congress assembled —

[illegible] That for the purposes of this act the words "white phosphorus" shall be understood to mean the common poisonous [illegible] the manufacture of matches [illegible] the nonpoisonous [illegible] phosphorus.

* * * * * * *

[illegible] nineteen hundred and [illegible]

* * * * * * *

[illegible]

COURT AND TREASURY DECISIONS.

The provision for "friction or lucifer matches of all descriptions," in the act of 1883 was held to include so-called safety matches. (Dept. Order, T. D. 5900.) Customs officers were instructed to have an actual examination of matches in their packages made by examiners at importers' stores instead of on the wharf. (Dept. Order, T. D. 6081.)

An article known as five-minute candle matches, about 3 inches long and one-fifth of an inch in diameter, consisting of a cotton wick or core covered with wax, the tip of which was coated with a preparation whereby the article could be ignited by friction, was held dutiable as matches and not as a manufacture of wax under the act of 1890. (G. A. 2178, T. D. 14214.)

A wax-coated cotton paper or ribbon, having attached thereto at regular intervals of about 1 inch a preparation similar to that contained on friction matches by means of which the taper or wick was ignited, was held dutiable as friction matches and not as a manufacture of wax under the act of 1890. (G. A. 2187, T. D. 14223.)

Under the act of 1909 (par. 436), the first to impose duty on fancy matches eo nomine, matches made of thin flat sticks, tipped with some ignitible composition colored, made up in pairs and pasted to a paper folder or wrapper in such a way that they may be conveniently carried in the vest pocket and the splints readily borken off one at a time as required, were declared to have no quality not found in the ordinary safety match of trade and to have the same common use, and, in the absence of a commercial designation, were held dutiable at three-fourths cent per thousand. (United Cigar Stores Co. *v.* U. S., 4 Ct. Cust. Appls., 66, T. D. 33311, reversing Abstract 28911, T. D. 32645; Abstract 28971, T. D. 32655; and Abstract 29212, T. D. 32681.)

Safety matches with colored sticks were likewise classified, but flamers or wind matches were held dutiable as fancy matches under that act. (U. S. *v.* Masson, 5 Ct. Cust. Appls., 77, T. D. 34103, modifying Abstract 33553, T. D. 33738.)

Safety matches, colored or uncolored or with varigated, varicolored stems, were held dutiable under paragraph 436 of the act of 1909 at the rate of 6 cents per gross boxes, or three-fourths cent per thousand, depending upon whether they were imported in boxes or otherwise than in boxes. (Dept. Order, T. D. 33633; Abstract 32588, T. D. 33511.)

Friction matches with stained sticks were held properly classified at 25 per cent ad valorem under paragraph 345 of the act of 1913. (Abstract 36768, T. D. 34871.)

Matches having red sticks or stems, imported in boxes containing less than 100 each, were held dutiable at 25 per cent ad valorem under paragraph 345 of the act of 1913 as matches having colored sticks or stems and not at 3 cents per gross under the provision for friction or lucifer matches of all descriptions. (G. A. 7669, T. D. 35097; Abstract 36768, T. D. 34871; Abstract 40377, T. D. 36509.)

Night lights, articles like candles but very short and very thick, which were not specifically provided for prior to 1913, were classified

under the act of 1909 as articles in part of metal when resting on a metal base, as nonenumerated manufactured articles when in part of metal or as manufactures of wax when in chief value of paraffin. (United States *v.* Borgfeldt, 3 Ct. Cust. Appls., 408; United States *v.* American Import Co., 3 Ct. Cust. Appls., 361; United States *v.* Park, 3 Ct. Cust. Appls., 350; United States *v.* Godilot, 3 Ct. Cust. Appls., 128; United States *v.* Coccaro, 4 Ct. Cust. Appls., 506; followed in Abstract 41763 as to candles in chief value of paraffin, 7 inches long, of different colors, each having a small wick in the center, and classified as tapers.)

Candles are not included among the lighting articles in paragraph 345 of the act of 1913.

Sanctuary lights consisting severally of a china base or stand, a wire implement, and a quantity of wicks composed of a bamboo core covered with braided cotton and coated with wax or paraffin, cotton being the component material of chief value, were held not to be tapers within paragraph 436 of the act of 1909, but were held dutiable under paragraph 332 as manufactures of cotton, wax, and wood, cotton chief value. (G. A. 7422, T. D. 33119, of 1913.)

CARTRIDGES, LOADED AND EMPTY, PERCUSSION CAPS.

SUMMARY.

Cartridges or charged shells embrace complete loads for modern breech-loading firearms. They consist in general of a metal or metal and paper casing filled with gunpowder. They contain in one end a percussion cap or primer for detonating the charge and in the other end a close-fitting lead or composition metal bullet or a measured amount of shot. Primers are shallow metal cups carrying a small amount of fulminate of mercury or other detonator.

The domestic manufacturing industry is highly organized and efficient and in normal times enjoys a substantial foreign trade in addition to supplying the domestic demand. The manufacturing process is largely automatic and is carried on in a small number of plants located in New England and in Ohio and Illinois. The strength of the domestic manufacturers' position is due in part to the large domestic demand for sporting purposes and in part to the prestige of the domestic firearms.

Exports before the war amounted to between $2,500,000 and $3,000,000 yearly. The available statistics mention only loaded cartridges (metallic), but domestic manufacturers state that paper shells and percussion caps amount to only 5 per cent of their export business.

Imports in normal prewar times seldom amounted to over $70,000 per annum. They are largely supplementary to the domestic production and include besides a small amount of ammunition as compared with the domestic product—ammunition for foreign sporting arms which are sold in small numbers in the United States, ammunition for obsolete European army rifles sold in the United States at a sacrifice, and a small number of empty shells sold to small ammunition-loading companies producing special loads not sold by the large producers.

The ammunition industry is of great importance in times of military crises. If the Nation is to be prepared for an emergency, some domestic plants must be maintained on a highly efficient plane. Large immediate production and elasticity as to output are required. European nations, not having the considerable nonmilitary domestic consumption necessary, stimulate their industries by supplying small nations with their military supplies and in some cases by subsidizing with money grants to insure the desired flexibility on short notice.

Percussion caps were dutiable at 40 per cent ad valorem under the acts of 1883 and 1890; 30 per cent ad valorem under the acts of 1894, 1897, and 1909; and 15 per cent ad valorem under the act of 1913. Cartridges were dutiable at 35, 30, and 15 per cent, respectively, under the acts of 1897, 1909, and 1913.

Due to the lower price of the metal abroad, domestic manufacturers are at some disadvantage in buying lead, an important item of expense in the manufacture of cartridges.

The tariff paragraph might be expanded to include primers. Percussion caps, in the trade, are confined to caps for use with muzzle-loading firearms, a practically obsolete weapon. Primers perform the same service (detonation of the charge) in the self-contained ammunition.

Summary table—Values—Cartridges.

Fiscal year.	Domestic production.	Imports for consumption.	Domestic exports.	Ratio to production.		Value (imports for consumption).	Amount of duty.	Actual or equivalent ad valorem rate.
				Imports.	Exports.			
				Per cent.	*Per cent.*			*Per cent.*
[illegible]						$74,977	$22,635	30.18
[illegible]						72,715	21,815	30.00
[illegible]						67,509	20,252	30.00
[illegible]						65,955	19,785	30.00
1914	$[illegible]	[illegible]	[illegible]	0.35	15.77	101,333	14,880	14.21
[illegible]						97,333	14,764	14.72
[illegible]						97,133	14,555	15.00
[illegible]						97,333	15,000	15.00
[illegible]						97,333	15,000	15.00
[illegible]						97,333	15,000	15.00
[illegible]						9,333	1,867	----------

[illegible] year.

General Information.

[illegible] Par. 348. Percussion caps, cartridges, and cartridge shells empty, 15 per cent ad valorem.

Description.

[illegible] are three types of cartridges in common use, namely, centre-fire metallic, rim-fire metallic, and shot-gun. Shot shells

Centre-fire metallic cartridges consist of a brass drawn case, headed and primed to receive the firing of ignition. The case contains a propellant in the nature of black or smokeless powder and a bullet in the front end. Centre-fire cartridges are used for all calibers except the common low-power rifle.

Rim-fire cartridges consist of a rolling head copper drawn cup, closed or headed at the closed end. The head of the case is filled with an explosive of priming mixture (potassium chlorate and fulminate of mercury). The shot contains a powder charge of black or smokeless powder and the lead bullet is inserted in the open end. Rim-fire shells are seldom used for calibers above .[illegible] .25 and .28.

Cartridge paper shot shells consist of a [illegible] tube of heavy fiber over one end of which is crimped a [illegible] The [illegible] is filled with [illegible] The [illegible] charge of [illegible] is placed in the shell and [illegible] with several [illegible] The [illegible] is [illegible] [illegible] The [illegible] is filled [illegible] The [illegible] is [illegible] [illegible] to [illegible] by [illegible]

Empty cartridges and shells are covered by the description of cartridges, the only difference being that they do not contain the propellant charge and bullet or shot.

Percussion caps and primers are shallow cups of gilding metal filled with fulminate or other igniting mixture. They are carefully sized to fit into the socket in the head of metal or paper shells or over the cap nipple of muzzle-loading weapons. Percussion caps are used to detonate the charge in muzzle-loading arms and primers are inserted in a pierced socket in the end of the cartridge.

Rifle cartridges are sized by the rifle bore the bullet fits. The bore is figured in hundredths of an inch and the cartridge is named the same way. Thus a 32-caliber shell contains a bullet to fit a rifle the bore of which is thirty-two one-hundredths of an inch in diameter. Large and special caliber cartridges are often given two or even three numbers and may be further classified by the name of a manufacturer or a trade name. In such cases the first number indicates the caliber, the second indicates the charge of black powder or smokeless powder equivalent in grains, and the third the weight of the bullet in grains. The trade name usually refers to the pattern of rifle for which the cartridge is designed. Thus a 45–70–405 Government cartridge is one containing a bullet weighing 405 grains to fit a 45 caliber rifle, Government model, and propelled by 70 grains of black powder.

The paper shot shells are used exclusively in shotguns. Shotguns are classified by a unit of bore diameter, known as the gauge, the origin of which is lost in antiquity. The most plausible explanation is that the gauge number is a measure of the number of lead balls of that diameter which can be cast from a pound of metal.

USES.

The material enumerated above is used in firearms for hunting and sporting purposes. The military importance of small arms—rifle and revolver—ammunition is self-evident.

DOMESTIC PRODUCTION.

Domestic firearms manufacturers were the pioneers in the development of cartridges. Repeating rifles, revolvers, and shotguns for sporting use were first developed in the United States and the growing popularity of this class of arm created an enormous demand for suitable ammunition. In 1914 returns from 32 companies showed a total capital investment in the industry of $37,454,000 and a yearly output valued at $30,840,000. An additional $3,101,645 was reported from concerns manufacturing other lines of goods.

The war caused a very large expansion in the industry and no approximation of the present capitalization is available (1920).

Raw materials.—The more important raw materials include copper and brass sheets, and paraffin-treated paper tubes for casings; lead, antimony, and cupro-nickel for bullets; and powder and fulminate of mercury for use, respectively, as propellant and detonator. The other requisites, many of which are components of the major items, are lead sulphocyanide, cornstarch, collodion, T. N. T., barium nitrate, potassium chlorate, antimony sulphide, shellac, gum arabic, glue, tin, wax, tallow, sulphur, and powdered aluminum. Most of the chemicals mentioned are used in the manufacture of gunpowder.

Crude nitrate is imported from Chile, nickel from Canada, and shellac and gum arabic from the East Indies and Central America. The balance of the raw materials are largely from domestic sources.

Equipment.—The automatic machines used in the munition plants of the United States are entirely of domestic manufacture, and as they were largely developed in this country, the domestic plants probably have an advantage over the foreign manufacturers in this respect.

Methods of production.—The manufacturing processes as operated in the United States are highly automatic. The shells are formed, primed, and filled entirely by automatic machines, which feed themselves and turn out a finished product. The exacting requirements of repeating and automatic firearms mechanism, together with the heavy strains that the shell is under at the moment of explosion, make exact sizing and careful annealing necessary. These points are carefully controlled in domestic plants. Foreign plants prior to the war used a large amount of hand-fed machinery, but it is probable that war developments have largely eliminated the less efficient types.

Organization.—The efficient conduct of the industry requires large plants, large capital investment, highly developed organization, and a wide market. In the United States most of the important cartridge manufacturers are also producers of firearms. This arrangement is of value to the consumer because cartridges are manufactured to fit every model of firearm as soon as it is put on the market.

Geographical distribution.—The manufacturing industry is highly centralized, 95 per cent of the production originating in five cities—New Haven and Bridgeport, Conn.; Lowell, Mass.; East Alton, Ill.; and Kings Mills, Ohio. From a military standpoint eastern cities are perhaps more liable to attack than are those in the Mississippi Valley.

History of the industry.—Self-contained ammunition first came into common use about 1850, when the mechanism of breech-loading firearms was perfected. The first shells were rim fire, but center-fire cartridges soon came into favor owing to demand for a cartridge which could be reloaded. In recent years improvements in gunpowder and detonator manufacture have greatly increased the efficiency of the cartridges in which the new products are used.

Domestic production and consumption.—According to the census statistics, the value of ammunition manufactured in the United States in 1914 was $30,840,000, which probably is a fair average of the yearly production before the war. Imports amounted to less than $100,000 in value, but exports totaled well over $3,500,000. The excess of producing capacity over domestic consumption is now more pronounced, due to the enormous expansion during the war, when all the allied Governments were supplied with ammunition of domestic manufacture.

Domestic exports.—Domestic manufacturers of cartridges have built up a substantial foreign trade in all parts of the world, but especially in undeveloped regions, such as Canada, Mexico, South America, Africa, and Australia. There they compete with the products of Great Britain, France, Germany, Belgium, and Canada, but are able to hold their own largely because of the fact that domestic makes of firearms are widely and favorably known in all foreign markets and the use of ammunition made especially for any particular arm follows

as a matter of course. In 1914 the exports included loaded cartridges valued at $3,521,533. This item did not cover either empty shells or percussion caps. A large manufacturer of ammunition reports that its exports consist of loaded cartridges (metallic) about 95 per cent; loaded paper shotgun shells, 4.5 per cent; empty paper shells, 0.3 per cent; and percussion caps, 0.2 per cent. War exports in 1917 were over $65,000,000. Under the circumstances, this is chiefly significant as showing the productive capacity of the domestic industry.

FOREIGN PRODUCTION.

All important European nations recognize the importance of the ammunition-manufacturing industry to the military program, but the test of the World War proved that Germany was the only power which was prepared to supply the required military supplies on short notice. The European nations are so thickly settled that, in general, hunting as a sport is restricted to the wealthy. On this account the home consumption of cartridges for other than military use is small. Those nations which normally supported a large standing army consumed a large amount of ammunition in target practice, but the quantity produced for home consumption was totally inadequate even for a limited military campaign. Germany alone among the large powers took measures to supplement in case of necessity the normal production. German arms manufacturers spent much time and large amounts of money to introduce their products abroad and secure their acceptance and use by the military authorities of the minor powers. This resulted in an enlarged production, and elasticity was assured by subsidizing other industries on condition that the plants be so constructed as to be capable of quick conversion to military uses in time of war.

IMPORTS.

Imports may be divided into four classes, viz: Ammunition for foreign high-power rifles, which are imported in small quantity; ammunition to fit old models of European army rifles; empty shells consigned to small ammunition loaders making a specialty of filling small orders of special loads not obtainable from regular manufacturers; and loaded ammunition to fit domestic firearms.

The market for foreign firearms ammunition in the United States is very limited. Usually the domestic manufacturers make no attempt to supply the special cartridges which must be used.

The United States has been the clearing house for obsolete army equipment from all over the world, and in this way large numbers of military rifles are obtained for domestic consumption at a very small price. Large quantities of ammunition are usually obtained with the arms, and are sold to buyers of the latter. The demand for this class of ammunition is temporary, and imports seldom extend beyond the initial shipment.

Domestic ammunition manufacturers have restricted their production to a small number of standard loads. This practice created a limited demand for special loads, of shotgun shells especially, and manufacturers specializing in this trade claim that domestic manu-

facturers of empty shells would not sell at a figure which would permit a profit on the loading operation.[1] The restricted supply of ammunition available for sporting use during the war years forced the public to depend solely upon factory loads, and as these gave satisfaction in most cases, the demand for abnormal or special loads has greatly decreased.

One Canadian manufacturer sold a considerable quantity of small-arms ammunition in the United States. It was confined largely to the popular 22-caliber size and found very little market outside of New England. Other imports of this nature are negligible.

Importations of cartridges, both loaded and empty, were valued at about $70,000, $72,000, $67,000, and $63,000, respectively, during the fiscal years 1910, 1911, 1912, and 1913. In 1914 imports increased to $84,622, of which $73,554 worth was imported after the passage of the tariff act of 1913. Imports decreased during the early war years, but increased to over $800,000 in value during 1917. In the same year the value of exports with the benefit of drawback amounted to $683,720. It is probable, therefore, that the imports in question were mainly special shells imported from the allied countries for loading in the United States.

Importations of percussion caps during the fiscal years since 1907 never exceeded $2,900 per annum, and during the four years 1911 to 1914, inclusive, the maximum yearly importation was only $621. The importations were probably composed in large part of primers.

PRICES.

Prices have increased about 100 per cent during the period 1914 to 1920. The increase in some instances was greater for large caliber metallic cartridges than for paper shells, because every available machine suitable for manufacturing the 30-caliber Army ammunition was requisitioned for that purpose.

The rim-fire 22-caliber ammunition is sold at a relatively lower price than is asked for that of larger calibers. This, no doubt, is due in part to the competition offered by the Canadian plant mentioned above. However, a more important reason is that the enormous popularity of this shell for target use permits manufacturers to produce it in very large quantities, obtaining the advantage of large-scale production with the accompanying reduction of overhead charges.

MILITARY IMPORTANCE OF THE INDUSTRY.

The essential nature of the ammunition manufacturing industry from a military viewpoint is apparent. It is of first importance that the domestic industry be efficiently organized and capable of considerable expansion at short notice in order that the military forces of the Nation may be adequately supplied.

The industry in the United States is the equal of those of European powers, not excepting Germany. The large normal consumption of the product in the United States for sporting purposes tends to assure the industry a substantial and continuing domestic market.

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[1] Tariff hearings, 1913, Comm. W. and M., p. 5307, brief of American Ammunition Co.

TARIFF HISTORY.

Percussion caps have been specially provided for in the tariff acts of 1883, 1890, 1894, 1897, 1909, and 1913, at 40, 40, 30, 30, 30, and 15 per cent, respectively.

Cartridges were not specially provided for prior to 1897. In that year the duty was placed at 35 per cent. The rate was reduced to 30 per cent in the act of 1909, and further reduced to 15 per cent in the act of 1913.

COMPETITIVE CONDITIONS.

Domestic brands of ammunition are favorably known throughout the United States and in fact in all countries. Popularity of ammunition in most cases, especially in foreign markets, follows popularity of firearms. In addition, certain domestic manufacturers, who do not manufacture firearms, have built up a large domestic demand for their ammunition. The manufacturer of both arms and ammunition possesses an advantage in that both products may be advertised and sold by a single organization for about the cost of handling either line separately. This factor materially reduces the cost of advertising and sale without impairing the efficiency of the service. In fact, the prestige enjoyed by firearms is highly advantageous in the sale of ammunition because the manufacturer in many cases will not guarantee the performance of either unless both products are used together.

TARIFF CONSIDERATIONS.

Specific duties are impracticable in dealing with cartridges and percussion caps because of the large variety of sizes and kinds in common use.

Lead constitutes an important part of the value of the finished product. This metal, when imported, is subject to a duty of 25 per cent ad valorem and generally sells at a higher price in the United States than in Europe.

Domestic cartridges are subjected to a duty of 30 per cent in Australia and 37½ per cent in Canada. The Great Britain preferential rate to those countries is but 15 per cent.

The words "percussion cap" as used in the trade refer only to the detonators used with muzzle-loading firearms. This article, although used to some extent in other countries, is practically obsolete in the United States. The trade name for the inserted detonator of cartridge ammunition is "primer." To avoid confusion, both percussion caps and primers should be specified.

Production in United States—Cartridges.

[From Federal census.]

Year.	Value.
1914	$25,572,877

Imports, by countries—Cartridges.

[Fiscal years.]

Imported from—	1906	1907	1908	1909 [1]
Austria-Hungary	243	595	1,281	748
Belgium	4,909	2,410	93	10,131
France	37	109	91	260
Germany	36,168	53,171	39,061	34,875
United Kingdom	303	399	1,528	498
Canada	83,248	45,391	20,093	21,885
All other	47	83	670	496
Total	124,955	102,158	62,817	68,893

[1] Included in "All other" after 1909.

Imports for consumption—Revenue.

CARTRIDGES.

Fiscal year.	Rates of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
				Per cent.
1907	35 per cent	$101,482.51	$35,518.90	35.00
1907 [1]	75 per cent of 35 per cent	3.00	.79	26.25
1908	35 per cent	70,322.99	24,613.05	35.00
1909	do	69,909.11	24,468.18	35.00
1910 [3]	do	2,701.00	945.35	35.00

CARTRIDGES AND CARTRIDGE SHELLS, EMPTY.

1910 [3]	30 per cent	$69,716.40	$20,914.92	30.00
1910 [4]	Duty remitted	9.00		
1911	30 per cent	72,171.55	21,651.47	30.00
1912	do	67,126.00	20,137.80	30.00
1913	do	63,450.00	19,035.00	30.00
1914 [5]	do	11,068.00	3,320.40	30.00
1914 [6]	15 per cent	73,554.00	11,033.10	15.00
1914 [6 7]	15–20 per cent	3.00	.36	12.00
1914 [8]	Free (Sec. IV, 35)	56,646.00		
1915	15 per cent	30,007.00	4,501.05	15.00
1915 [9]	Free	600.00		
1916	15 per cent	83,366.00	12,501.90	15.00
1917	do	818,523.00	122,778.45	15.00
1918	do	177,546.00	26,631.90	15.00
1919	do	982,597.00	147,389.55	15.00

CARTRIDGES AND CARTRIDGE SHELLS, EMPTY.

Calendar year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1918	15 per cent		$1,024,589	$153,688.35		15
1919	do		170	25.50		15
1920	do		8,885	1,333.00		15
1921 [10]	do		14,512	2,176.00		15

CARTRIDGES.

		Thousands.				
1919	15 per cent	10	$166	$29.90	$16.60	15
1920	do	667	8,782	1,317.00		15

CARTRIDGE SHELLS, EMPTY.

1919	15 per cent		$4	$0.60		15
1920	do		103	15.00		15
1921 [10]	do		22	3.30		15

[1] From Philippine Islands.
[2] July 1 to Aug. 5, 1909, under act of 1897.
[3] Aug. 6, 1909, to June 30, 1910, under act of 1909.
[4] For use of foreign minister.
[5] July 1 to Oct. 3, 1913, under act of 1909.
[6] Oct. 4, 1913, to June 30, 1914, under act of 1913.
[7] Reciprocity treaty with Cuba.
[8] For construction and equipment of vessels.
[9] For use of the United States.
[10] 6 months ended June 30, 1921.

Cartridges and cartridge shells, empty—Drawback.

Fiscal year.	Value.	Drawback paid.	Drawback.
1917	$683,720	$101,532.42	$102,558.00

Imports for consumption—Revenue—Percussion caps.

Fiscal year.	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
				Per cent.
1907	30 per cent	$776	$232.80	30
1908	do	1,132	339.60	30
1909	do	2,863	858.90	30
1910	do	2,551	765.30	30
1911	do	547	164.10	30
1912	do	483	144.90	30
1913	do	535	160.50	30
1914 [1]	do	221	66.30	30
1914 [2]	15 per cent	401	60.15	15
1915	do	1,758	263.70	15
1916	do	2,356	353.40	15
1917	do	1,543	231.45	15
1918	do	345	51.75	15
1919	do	741	111.15	15
1920 [3]	do	50	7.50	15
1921 [4]	do	270	41.50	15

[1] July 1 to Oct. 3, 1913, under act of 1909.
[2] Oct. 4, 1913, to June 30, 1914, under act of 1913.
[3] Calendar year.
[4] 6 months ending June 30, 1921.

Domestic exports—Cartridges, loaded.

FISCAL YEARS.

Exported to—	1910	1911	1912	1913	1914
Belgium	$12,548	$13,190	$13,874	$16,967	$8,291
Denmark	4,743	129	2,657	4,254	1,485
France	4,662	2,204	3,996	8,841	6,093
Germany	22,535	26,225	31,795	29,467	36,792
Greece	5,591	3,773	4,854	160,371	7,249
Italy	610	1,119	787	2,147	2,755
Russia in Europe	397	101	.....	437	437,504
Russia in Asia	11,237	13,178	12,481	13,331	8,961
Spain	5,042	5,768	4,206	2,696	1,950
United Kingdom	40,555	40,589	90,264	68,293	72,233
Canada	172,332	231,930	299,269	327,756	374,811
Guatemala	13,721	368	3,257	45,099	5,850
Panama	7,058	21,130	15,978	15,220	12,761
Mexico	164,071	179,209	256,409	182,311	749,995
Cuba	36,619	244,758	102,436	66,001	173,169
Argentina	283,334	160,086	212,643	267,817	194,555
Brazil	519,222	445,441	371,771	477,349	287,600
Australia and New Zealand	296,907	286,928	252,109	301,400	275,639
Philippine Islands	579,427	501,888	226,791	104,353	419,768
All other	341,138	489,109	389,344	562,996	444,972
Total	2,521,749	2,667,123	2,294,921	2,657,106	3,521,533

Domestic exports—Cartridges, loaded—Continued.

FISCAL YEARS—Continued.

Exported to—	1915	1916	1917	1918	1919
Belgium	$2,137	$28,000			
Denmark	4,685	9,386	$9,272		$1,410,435
France	4,926,294	6,786,591	13,472,878	$1,271,892	81,979
Germany	2,485				
Greece	19,144	8,730	2,955	16,000	38,917
Italy	3,714	21,197	104,336	5,430,032	3,106,107
Russia in Europe		218,428	24,173,167	3,653,922	
Russia in Asia	11,424	232,514	2,905,275	14,313	369,818
Spain	9,675	1,958,484	2,709,573	137,881	25,824
United Kingdom	7,753,487	23,534,182	18,999,984	549,414	34,822
Canada	377,608	257,663	243,428	181,378	185,290
Guatemala	29,109	157,099	200,532	14,051	38,274
Panama	13,454	22,591	109,626	13,304	6,778
Mexico	2,896,244	1,972,680	1,945	39,913	72,374
Cuba	324,213	101,732	240,959	144,522	145,472
Argentina	435,895	347,051	265,445	156,105	276,053
Brazil	276,879	337,223	570,824	309,336	609,610
Australia and New Zealand	258,423	442,163	387,003	857,100	1,010,907
Philippine Islands	145,344	113,643	35,948	39,553	124,002
All other	223,991	534,131	675,392	843,655	1,240,074
Total	17,714,205	37,083,488	65,108,542	13,672,371	8,776,736

CALENDAR YEARS.

Exported to—	1918	1919	Exported to—	1918	1919	1920
Denmark	$56	$1,416,767	Chile	$70,433	$153,176	
France	860,247	3,905	Peru	21,730	212,959	
Italy	6,907,115	485,545	China	162,853	106,920	
Russia in Europe		3,516,300	British India	81,438	174,572	
Russia in Asia	359,283	180,045	Australia	734,628	801,867	
United Kingdom	47,107	100,669	New Zealand	133,390	133,334	
Canada	164,870	341,054	Philippine Islands	76,424	116,817	
Mexico	5,489	99,283	British South Africa	136,487	213,337	
Cuba	121,475	213,248	All other	230,197	849,765	
Argentina	209,490	552,137				
Brazil	442,053	674,657	Total	10,764,765	10,346,957	$5,972,332

Rates of duty—Cartridges, loaded and empty—Percussion caps.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	474	Percussion caps	40 per cent ad valorem.
1890	442	do	Do.
1894	327	do	30 per cent ad valorem.
1897	424	do	Do.
		Cartridges	35 per cent ad valorem.
1909	437	Percussion caps, cartridges, and cartridge shells, empty	30 per cent ad valorem.
1913	346	do	15 per cent ad valorem.

Court and Treasury Decisions.

Detonators are not percussion caps. (G. A. 2291, T. D. 14407, of 1893; G. A. 2342, T. D. 14550, of 1893.)

Paragraph 424 of the act of 1897 was construed to cover cartridges for miniature guns and pistols. (G. A. 5467, T. D. 24768, of 1903.)

BLASTING CAPS.

General Information.

Act of 1913.—Par. 346. * * * blasting caps, $1 per thousand.

DESCRIPTION.

Blasting caps as sold in the United States consist essentially of a measured charge of high explosive pressed into a thin copper shell. The shell is approximately ¼ inch in diameter and of varying lengths, depending on the density of the explosive used in the cap and also on the quantity. Ordinarily, fulminate of mercury is the explosive used, but sometimes other explosives are used in combination with it. The fulminate is pressed in the shell at such a pressure and in such a way that it will not readily come loose in transportation and yet so that it is not pressed too tight so as to fail of ignition when exposed to spark or open flame.

There are two grades commonly sold, commercially known as the No. 6 and the No. 8 caps. The No. 6 cap contains 1 gram of fulminate of mercury, or its equivalent, and the No. 8 cap contains 2 grams, or its equivalent.

Caps are used in connection with fuse to detonate the various high explosives used for commercial purposes, especially in the blasting of coal, ores, and in quarry operations.

The blasting cap is of the greatest commercial importance since it is the only practical and economical means which we have of properly detonating the high explosives necessary to blast coal and the various ores. At the present time, rock for such industries as road building, cement making, etc., are mined by the use of explosives together with the various ores, such as iron, gold, etc., and coal. The quantities of these materials obtained without the use of explosives are negligible, and there are no methods developed to date which could be used in place of the explosive method. In land-clearing operations, drainage propositions, tree planting, etc., dynamite is used to a very large extent and the quantity used for such propositions is increasing every day. Dynamite would be useless in all instances without the blasting cap.

In addition to the blasting cap, there is manufactured an electric blasting cap which is basicly very similar in construction. An arrangement is provided for obtaining ignition by passing an electric current through two wires which are inserted in the shell and which are connected at their terminals by means of a very fine wire which the current renders incandescent.

In coal-mining operations especially, such a cap is much the safer as the ignition can be obtained without bringing an open light into gaseous and dusty areas. Open lights may be dangerous in coal mining due to the possibility of explosive gases being present. Some

mining companies accordingly insist on the electric blasting cap. For certain metal-mining operations where it is necessary that a number of shots be fired at one time, the electric blasting cap is the best means of accomplishing this purpose.

Due to the complicated construction of electric blasting caps, the cost and extra labor for such a cap with 6-foot lead wires is approximately five times as great as for straight blasting caps. The cost of the fuse used with the ordinary caps brings the value up to a more comparable basis.

DOMESTIC PRODUCTION.

The consumption of blasting caps or electric blasting caps in the United States is approximately 250,000,000 caps per year, and the manufacturing capacity approximately 515,000,000, or more than twice the consumption.[1]

Blasting caps or electric blasting caps are essential where every kind of high explosives are used.

The principal industries using blasting caps or electric blasting caps are metal mining, coal mining, railroad construction, quarrying, and agricultural purposes.

Materials.—The principal materials used in manufacture are copper gilding metal, nitric acid, ethyl alcohol, chlorate of potash, and quicksilver. The nitric acid comprises essentially sulphur and nitrate of soda.

Gilding.—The manufacture of this material is not dependent on foreign sources. It is made of a combination of copper and spelter, both of which are produced in this country. Prior to the war the crucibles that were used in melting were imported from Germany, but now a satisfactory grade is being made here.

Nitric acid.—The chief ingredient in nitric acid is nitrate of soda, which is imported from Chile. There are ample manufacturing facilities in this country once the nitrate of soda has been imported.

Ethyl alcohol.—There is ample manufacturing capacity in this country, the chief raw material being imported from Cuba and Porto Rico. The largest percentage of the manufacturing capacity in this country is designed for the use of imported molasses, and if this supply were eliminated manufacturers would have to use grain, adding to the cost of manufacturing.

Chlorate of potash.—The basic raw material (potash) is imported from Alsace-Lorraine and Germany. Present tariff permits free importation.

Quicksilver.—Quicksilver is produced in the western part of the United States, but this country imports considerable quantities from Spain, Portugal, Italy, and Mexico to supplement domestic production. There is a duty of 10 per cent now on quicksilver. The manufactured fulminate is now on the free list.

Equipment.—The equipment and machinery used in the manufacture of blasting caps is produced in the United States. There is one exception, the glass balloons used in the manufacture of fulminate of mercury, the principal explosive ingredient in blasting caps. These balloons were obtained from Jena, Germany, but at the outbreak of the war foreign shipments ceased, and domestic sources of supply had to be developed. Due to the treatment which these bal-

[1] Statement from the largest manufacturer.

looms receive in the process of manufacturing fulminate of mercury, they had to be specially developed and designed. Cap manufacturers claim that they have not been able to obtain the quality of product previously received from Germany. Several domestic manufacturers have tried to make these balloons with varying degrees of success.

Most of the other machinery and equipment used in the actual production of blasting caps is of special design and construction, developed by years of careful study, investigation, and practical experience. The machine-shop equipment, of course, is of standard American manufacture.

Methods of production.—The production of blasting caps requires three departments—the shell-drawing, fulminate manufacturing, and cap-loading divisions.

The shell-drawing division is one in which the copper tubes used in the manufacture of blasting caps are made. Specially designed and tooled machines take copper gilding metal of various specified widths and thicknesses, and by means of automatic and semiautomatic drawing machines bring this copper gilding metal to the form of a one-piece copper tube, open at one end of approximately 0.221 inch diameter, in lengths from 1 to 3 inches, inclusive, having walls 0.007 inch in thickness. The operation of manufacturing these shells is necessarily very delicate and requires the most exacting care and close attention to details.

The fulminate division manufactures fulminate of mercury from quicksilver, nitric acid, and ethyl alcohol. Quicksilver and nitric acid are placed, according to a specific formula, in a small dissolving flask; after being allowed to stand for a specified time, are brought to the fulminate plant, placed in a glass balloon containing a specific quantity of ethyl alcohol. A violent reaction is set up, at the end of which the residue left in the balloon is crystalized into fulminate of mercury. The fumes from the reaction are sucked into a very complicated recovery system, and after a series of condensations and neutralizations, alcohol and quicksilver are recovered from them.

The fulminate after being manufactured is stored under water and when required for use is thoroughly dried in dry houses built for that purpose, and brought to the mixing houses, where it is incorporated with chlorate of potash, the other essential ingredient in the blasting cap explosive mixture, and is then brought down to the cap-loading department, which loads the mixture into the shells which have been received from the shell plant.

The fulminate of mercury manufactured and used in this business is the most highly sensitive commercial explosive manufactured at the present time. So many special safety features and fire-protection features are necessary to reduce hazards to a minimum.

Organization.—The special and peculiar nature of the product requires a carefully trained and highly developed organization, both technical and practical, to successfully and safely carry on the manufacturing operation. A large amount of capital is required to carry on this business. At the present time the du Pont Co. states it has $4,056,000 invested in the blasting cap and electric blasting caps business, which would at present replacement values amount to 20 per cent more. There are a great many buildings required in the manufacturing operation because of the hazardous nature of

the material handled, which required limits as to the amount of explosives material that can be carried in any one building and specified distances between buildings and artificial and expensive barricades around the buildings in which the explosives materials are carried and handled. Other manufacturers engaged in the industry within the United States are Atlas Powder Co., of Wilmington, Del.; Aetna Explosive Co., of New York City; California Cap Co., of Oakland, Calif.

The plants are not adapted to the manufacture of other material. None of the machinery, except the generators, is adapted for the manufacture of other materials, and neither are the plants logically situated except for the manufacture of caps and electric blasting caps or some similar product.

Geographical distribution.—The principal manufacturing plants are located in the States of New Jersey, New York, Pennsylvania, and California, the largest in New Jersey. Many distributing magazines are maintained throughout the United States and Alaska in which stocks are carried in order to give prompt and economical service to the trade.

Domestic production and consumption.—The annual consumption of blasting caps and electric blasting caps amounts to 250,000,000 per year, with an approximate gross value of $6,000,000.

Domestic exports.—The following statement of the du Pont Co. indicates its domestic and export sales for the periods named:

	Domestic sales.	Export sales.	Grand total.	Per cent export.
1914	138,096,262	8,251,200	146,347,462	5½
1915	136,437,423	119,217,371	255,654,794	46½
1916	142,595,314	128,698,600	271,293,914	47
1917	150,603,233	78,940,100	299,543,333	34
1918	111,160,849	66,750,550	177,911,399	37½
1919	71,495,686	22,310,200	93,805,886	23½
1920 (6 months)	56,697,073	10,144,073	66,841,146	15

The du Pont Co. states: "It will be noted that our export sales for 1914, which was a normal year and may be taken as a criterion of what we may expect in the way of exports in normal times, was 5½ per cent of the total as against 34 to 47 per cent during the war period. It is true that we have had a larger percentage of export business since the war than we enjoyed before the war, but we believe that this is due to foreign manufacture (Germany and Austria) not having as yet become rehabilitated, and just as soon as they do our percentage of export trade will recede to the normal before the war, the percentage having already declined from 23½ per cent in 1919 to 15 per cent for the first six months of 1920."

During the war domestic manufacturers exported to most foreign countries except the Central Powers, the bulk of the shipments going to Africa, China, Japan, Italy, Spain, Norway, Sweden, Russia, Wales, and South America, whereas in normal times the bulk of our export shipments go to Mexico and South America and to American mining operations using American explosives.

The principal competing nations at the present time are Austria, Belgium, Germany, England, and Japan.

FOREIGN PRODUCTION.

All domestic manufacture of caps and electric blasting caps follows pretty closely one standard formula, but claims are made that the quality of foreign product is variable. Blasting caps are not sold by weight. Therefore it is difficult for a layman to determine whether the weight of the charge or kind of composition used conforms to standard because of the danger in extracting the charge from the shell for analysis.

Belgium, Germany, Austria, and Japan are the principal producing nations that have potential power as American competitors. The industry in these countries is either controlled by highly organized syndicates or subsidized by the Government. Each of these countries offer a sufficient volume of business in their own domain to make production economical. They also have the advantage of lower labor cost.

IMPORTS.

Foreign competition is not serious and America has heretofore only been considered by foreign producers as a market for surplus stocks, and foreign producers have apparently not as yet sufficiently recovered from the effects of the war to accumulate very large surplus, but quotations have recently been received at prices materially lower than domestic quotations.

Importations have always been sporadic. There are no disadvantages of transportation, geographic, or other conditions to induce domestic consumers to seek foreign products.

There are no substitutes that can compete with blasting caps, but there are some cheap explosive ingredients which may be used as a substitute for standard ingredients for loading caps. This might dangerously affect blasting operations at the hands of consumers.

The Du Pont Co. reports recent quotations from the Belgium Powder Syndicate offering No. 6 blasting caps at 140 francs ($12 per 1,000) f. o. b. Antwerp, which is equivalent to $13.10 per 1,000 f. o. b. New York, including freight and duties, the freight being approximately 10 cents and duty $1 per 1,000, as against present domestic wholesale price of $15.32, a difference of $2.22. Quotations have also been received from England at 65 shillings per 1,000 for No. 6 blasting caps f. o. b. English ports and from Japan at 18 yen per 1,000 f. o. b. Japanese ports.

PRICES.

Owing to fluctuation in material costs and labor costs during the war, prices are still unstable. Comparison of wholesale prices at home and abroad as they prevailed in 1913 seems more significant of general conditions.

The following table shows a comparison of prices compiled in 1912:[1]

[1] Statistics compiled by the Du Pont Co.

Grade cap.	German prices f. o. b. Hamburg.		American prices f. o. b. New York.
	For use in United States.	For use in Germany.	For use in United States.
No. 3	Mks. 8.25-$1.96	$3.47	$4.50
No. 4	10.00- 2.38	4.40	4.89
No. 5	11.50- 2.74	4.77	5.35
No. 6	15.00- 3.57	5.95	6.39

Comparison of 1913 wholesale prices (domestic and foreign):

Grades.	Weight.	Germany to United States.	United States.	Canada.
	Gms.			*Per 1,000.*
No. 3	550	$3.57	$4.55	$5.65
No. 4	650	4.05	5.00	6.00
No. 5	800	4.88	5.45	6.80
No. 6	1,000	5.95	6.38	7.60
No. 7	1,500	8.21	8.25	9.30

Prices in column 3 (Germany) are from reports of American Consul General Skinner at Hamburg, dated February 27, 1913, and published in Daily Consular Report of April 16, 1913.

TARIFF HISTORY.

The tariff act of 1894 provided a specific duty of $2.07 per 1,000 caps, which was raised to $2.36 in 1897. With this increase in duty, Germany continued to export to this country on an average of 4,500,000 per year, or approximately 15 per cent of the domestic consumption at that time. Domestic manufacturers claim that the foreign producers quoted prices very much lower (sometimes as much as 40 per cent lower) than prices at which they were sold to the consuming trade in their own country. (See price quotation on p. 34.)

The tariff act of 1909 set the duty at $2.25 per 1,000, and the act of 1913 at $1 per 1,000.

COMPETITIVE CONDITIONS.

The American producer has the advantage of having domestically available practically all raw materials, and also of being closer to consumption destinations. The disadvantages are cheaper foreign labor and raw materials, highly organized syndicated control abroad, permitting favorable export marketing. These foreign syndicates also extend long credits in order to induce trade.

The condition of the industry at present is that only half of its productive capacities of domestic manufacturers is being used on account of domestic consumption having fallen off after the war, and also to loss of export business through foreign competition.

TARIFF CONSIDERATIONS.

Blasting caps are universally designated by grades numbered 3 to 8, each supposed to have a given weight of explosive composition, the lowest number having the least weight. The grade most used in America is No. 6, and domestic producers claim that it is quite common practice for foreigners to put a No. 6 label on a No. 5 grade for sale at lower prices in the American market as a standard No. 6 grade. The Bureau of Mines published circulars cautioning miners not to use anything weaker than the No. 6 grade blasting cap or electric blasting cap. A proviso requiring all manufacturers of blasting caps to number according to the accepted domestic standard, or to state the strength or equivalent weight of fulminate used, would safeguard domestic consumers against all understrength material.

Domestic grading of strength.

Number of cap.	Weight of fulminate of mercury.	Number of cap.	Weight of fulminate of mercury.
	Gram.		*Gram.*
No. 5	0.8	No. 7	1.5
No. 6	1.0	No. 8	2.0

Imports by countries—Caps, blasting and percussion.[1]

[Fiscal years.]

Imported from—	1906	1907	1908	1909
Belgium				$240
France				46
Germany	$12,894	$16,010	$106	5,747
United Kingdom	114	192	444	2,556
Canada	1,075	310	658	97
Mexico	1			10
Total	14,084	16,512	1,208	8,696

[1] Included in "All other explosives" after 1909.

Imports for consumption—Revenue—Blasting caps.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal years:		*Thousands.*				*Per cent.*
1907	$2.36 per thousand.	6,111.40	$15,982.00	$14,422.91	$2.62	90.25
1908	....do....	8.60	67.00	20.30	7.79	30.30
1909	....do....	2,066.50	5,826.00	4,876.96	2.82	83.71
1910 [1]	$2.25 per thousand.	933.95	3,394.00	2,101.40	3.64	61.92
1911	....do....	541.80	1,263.00	1,219.06	2.33	96.52
1912	....do....	102.20	494.00	229.95	4.83	46.55
1913	....do....	2.50	100.00	5.63	40.00	5.63
1914 [2]	$1 per thousand	1,393.00	4,890.00	1,393.00	3.51	28.49
1917	....do....	8.00	80.00	8.00	10.00	10.00
Calendar year:						
1918	....do....	1.00	5.00	1.00	5.00	20.00
1920	....do....	7.00	191.00	7.00	27.28	3.66
1921	....do....					

[1] Aug. 6, 1909, to June 30, 1910, under act of 1909.
[2] Oct. 4, 1913, to June 30, 1914, under act of 1913.

Imports by countries—Fuse, mining and blasting.[1]

Imported from—	1906	1907	1908	1909
Belgium			$2,732	$15,000
Germany	$10,070	$6,617	115	635
United Kingdom	15	3,212		
Canada	132			
Hongkong	4			
Total	10,221	9,829	2,847	15,675

[1] After 1909 included in "All other explosives."

Imports for consumption—Revenue.

MINING, BLASTING, AND SAFETY FUSE OF ALL KINDS NOT COMPOSED IN CHIEF VALUE OF COTTON.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal years:		*Pounds.*				*Per cent.*
1910 [1]	35 per cent		$93,689.00	$32,791.15		35
1911 [1]	do		113,888.00	39,860.80		35
1912 [1]	do		105,517.00	36,930.95		35
1913 [1]	do		149,448.15	52,306.84		35
1914 [1]	do		48,605.00	17,011.75		35

MINING, BLASTING, AND SAFETY FUSE OF ALL KINDS.

Fiscal years:						
1914 [2]	15 per cent		$134,429.80	$20,164.48		15
1915 [2]	do		75,202.00	11,280.30		15
1916 [2]	do		4,067.00	610.05		15
1917 [2]	do		1,240.00	186.00		15
1918 [2]	do		4,597.00	689.55		15
Calendar years:						
1918	do		195.00	29.25		15
1919	do	4,878	1,554.00	233.10	$0.313	15
1920	do	8,215	3,771.00	565.65		15
1921 [3]	do		762.00	112.30		15

[1] Under act of 1909. [2] Under act of 1913. [3] Six months ended June 30, 1921.

Rates of duty—Mining, blasting, or safety fuses.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1909	437	* * * mining, blasting, or safety fuses of all kinds, not composed in chief value of cotton.	35 per cent ad valorem.
1913	346	* * * mining, blasting, or safety fuses of all kinds	15 per cent ad valorem.

Blasting caps.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1894	327	* * * blasting caps	$2.07 per 1,000 caps.
1897	424	do	$2.36 per 1,000 caps.
1909	437	do	$2.25 per 1,000 caps.
1913	346	do	$1 per 1,000 caps.

COURT AND TREASURY DECISIONS.

Blasting caps or detonators composed of fulminate and copper, fulminate chief value, were held dutiable as manufactures of copper and not as fulminate under the act of 1890. (G. A. 2684, T. D. 15158.)

JOSS STICK.

General Information.

1913 tariff paragraph 521.—Joss stick or joss light. Free.

DESCRIPTION AND USES.

Joss sticks are reeds covered with paste made from the dust of odoriferous woods or cylinders made wholly of the paste. They are used by the Chinese to burn before their idols, as slow matches in measuring time at night, and for lighting pipes, and are widely used by other peoples as deodorizers.

IMPORTS.

Imports in 1914 were valued at $6,888, which is far below the average for the years 1908–1920. In the calendar year 1920 imports were valued at $41,087. Practically all come from China, Hongkong, and Japan.

TARIFF HISTORY.

The provisions relating to joss stick or joss light in the tariff act of 1913 are identical with those in preceding acts.

INTERPRETATION AND COMMENTS.

A joss stick is a perfumed stick made of wood powder and paste, and burned by the Chinese in their temples as incense, and also for measuring time at night (Abstract 36003, T. D. 34604, of 1914; Abstract 37183 of 1915, Abstract 38901 of 1915); mosquito sticks and mosquito incense are not within this provision (T. D. 32699, of 1912). A protest claiming free entry of spunk as joss sticks was overruled without affirming the collector's classification of the importation as an unenumerated manufactured article (Abstract 38407, of 1915), but on an extended record spunk for lighting firecrackers was held dutiable as an unenumerated manufactured article (G. A. 8296, T. D. 38169, of 1919).

After many years of litigation from time to time under paragraph 521 and paragraph 608 for spunk, there is still doubt concerning these articles, which might be removed by omitting both paragraphs from the law and relegating the commodity in any form and however described to paragraph 385 (Schedule N, sundries) for unenumerated articles.

Imports for consumption—Revenue—Joss stick.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal years:						
1908	Free		$24,536			
1909	do		34,991			
1910	do		22,898			
1911	do		9,660			
1912	do		15,197			
1913	do		13,851			
1914	do		6,888			
1915	do		21,720			
1916	do		36,969			
1917	do		36,115			
1918	do		30,660			
Calendar years:						
1919	do		32,328			
1920	do		41,087			
1921[1]	do		9,047			

[1] Six months ended June 30, 1921.

SPUNK.

GENERAL INFORMATION.

1913 tariff, paragraph.—608. Spunk. Free.

DESCRIPTION AND USES.

Spunk is a kind of tinder made from a species of fungus found on old trees. It is also called punk, amadou, black match, pyrotechnical sponge, and German tinder.

IMPORTS.

Imports are negligible. They amounted to $397 in 1912, the highest since 1908.

TARIFF HISTORY.

The provisions in the 1913 act relating to spunk are identical with those in preceding acts.

INTERPRETATION AND COMMENTS.

Merchandise invoiced as punk, reported by the appraiser as such and assessed as a nonenumerated manufactured article under paragraph 385, was held free of duty as spunk under this paragraph, the words "punk" and "spunk" being apparently interchangeable terms. (Abstract 41510, of 1917.) In a later case the merchandise under consideration was reported to be composed of a mixture of wood powder and paste, commonly used in this country for the lighting of firecrackers, and it was stipulated that the merchandise was of the same character as that the subject of Abstract 41510. In that case and other cases decided by the board and the courts, similar merchandise was, under the evidence, held to be in some cases spunk, a vegetable fungus growth, and in other cases the same as Chinese joss sticks (par. 521). In those previous cases the evidence was meager and the records unsatisfactory. In this case the evidence fully and clearly shows the merchandise to be neither joss sticks nor spunk, but a manufactured article intended and used for specific purposes. The different evidence distinguishes this case from those previously decided. The merchandise was held properly classified under paragraph 385. (G. A. 8296, T. D. 38169, of 1919; T. D. 37659, of 1918.)

Imports for consumption—Revenue—Spunk.

	Rates of duty.	Value.
Fiscal years:		
1908	Free	$323
1909	do	154
1910	do	195
1911	do	15
1912	do	377
1913	do	101
1914	do	115
1916	do	54
1918	do	12
Calendar years:		
1919	do	101
1920	do	54
1921 [1]	do	

[1] 6 months ending June 30, 1921.

UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPHS 341, 342, and 343 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

TOYS AND GAMES

Paragraph 341:
Dice, Dominoes, Billiard Balls, etc.

Paragraph 342:
Toys

Paragraph 343:
Emery Grains, Wheels, etc.
(For treatment, see par. 75.)

Paragraph 470:
Curling Stones and Quoits

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this, industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act, reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and index," the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Guy G. George, of the Commission's staff, and others.

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TOYS AND GAMES.

DICE, DOMINOES, ETC.

Summary table—Dice, dominoes, draughts, chessmen, chess balls, and billiard, pool, and bagatelle balls, and poker chips.

Year.	Value (imports for consumption).	Amount of duty.
1910	$47,759	$23,879
1911	49,998	24,999
1912	57,147	28,573
1913	61,108	30,554
1914	[1] 67,789	33,857
1915	40,433	20,216
1916	29,077	14,538
1917	31,794	15,897
1918	[1] 32,324	16,160
1919	29,223	14,611
1920	[1] 50,061	25,079
1919 [2]	57,789	28,893
1920 [2]	55,464	27,733

[1] Includes imports from Cuba, which are negligible. [2] Calendar year.

GENERAL INFORMATION.

1913 TARIFF PARAGRAPH.

341. Dice, dominoes, draughts, chessmen, chess balls, and billiard, pool, bagatelle balls, and poker chips, of ivory, bone, or other materials, 50 per centum ad valorem.

DESCRIPTION AND MATERIALS USED.

DICE.

Dice are made from bone and are mostly manufactured in France, there being no manufacturers of dice in this country on a large scale. Due to the war and to restrictions placed on raw materials, also the shortage of labor, the manufacture of this article has declined. There are four establishments in the United States engaged in this industry.

DOMINOES AND CHECKERS.

Dominoes and checkers (draughts) are made of (*a*) pure ivory; (*b*) a composition consisting of celluloid, guncotton, camphor, and ivory dust; (*c*) bone, wood, and celluloid. Wood now is being employed more extensively in the manufacture. Previous to the war dominoes and checkers were chiefly produced in France, England, and Germany.

The method of manufacture of dominoes and checkers is almost entirely one involving the use of automatic machinery. In the manufacture of this article establishments have the ordinary facilities for

drying stock, rip-sawing, and gang-sawing it. After this point the use of automatic machinery is exclusive. These goods were imported into the United States in past years from Germany. From information at hand it appears that the processes employed in Germany are done very largely by hand, in judging from the quality of the work. The bulk of production of dominoes in the United States is designed to retail at 25 cents and less per set. There are 15 establishments.

CHESSMEN.

Wood is the material of chief value used in the manufacture. There are four establishments engaged in the industry. Two of the largest commenced operations in 1914. Previous to the war chessmen were chiefly manufactured in France, England, and Germany. The following is illustrative of dimensions and prices:

Size of king piece.

Height, 3¾ inches; diameter, 1 5/16 inches	$5.00
Height, 3¾ inches; diameter, 1¼ inches	6.00
Height, 4¾ inches; diameter, 1¾ inches	8.00

BILLIARD, POOL, AND BAGATELLE BALLS.

Billiard, pool, and bagatelle balls are made of bone, ivory, or a composition consisting of celluloid, guncotton, camphor, and ivory dust. When made of composition, the materials are boiled at a temperature of 280° and when cooled are hard and translucent. Pure ivory is not used so much now in the manufacture of billiard balls as formerly, though ivory is particularly valued for billiard balls and no equally good substitute has been found. There are eight establishments engaged in this industry.

POKER CHIPS.

Except for a limited quantity of celluloid chips there are two kinds, paper and composition chips. The raw materials used in the manufacture are paper for the unbreakable poker chips; plastic material, consisting of clay, rosin, shellac, and coloring matter, for the composition chips.

Japan is America's chief competitor in the production of poker chips. Shellac is the component material of chief value used in the manufacture of poker chips in Japan. The other ingredients used are calcium sulphate, barium sulphate, clay, cotton, color, shellac, rosin, and zinc sulphate.

To do an annual business of $50,000 it takes an investment of machinery and dies of fully $35,000 and the renewal of dies from $3,000 to $5,000 annually, as they wear out quickly. This amount also includes the replacement of machinery by reason of wear and tear. A business of this size can not turn out more than one and one-half times the value of machinery and investment per annum. The demand for poker chips is largely for the cheap grade on which the profit is small. The product has maintained a steady growth. There are nine establishments in the United States.

Composition-button manufacturers have been large manufacturers of poker chips, being most active between seasons of the button market. It is probable that they had different mechanical facilities from those concerns making poker chips only.

PRODUCTION IN THE UNITED STATES.

Statistics of production are not readily available. Establishments engaged in the manufacture of these articles are not given a separate classification by the census. Their products are included with those of establishments engaged in the manufacture of "Toys and games" and "Sporting and athletic goods."

IMPORTS.

The value of imports of all the articles rose gradually from $46,787 in 1910 to $68,780 in 1914. Practically all of the imports came from France and Germany. Imports from France amounted to $25,487, or a little over 79 per cent of the total for the year 1918.

Imports by countries.

DICE, DRAUGHTS, CHESSMEN, CHESS, BILLIARD, POOL, AND BAGATELLE BALLS AND POKER CHIPS OF IVORY, BONE, OR OTHER MATERIALS.

[Fiscal years.]

Imported from—	1910	1911	1912	1913	1914	1915	1916	1917	1918[1]
Austria-Hungary	$87	$32	$276	$239	$290	$92	$54	.....	.....
Belgium	703	130	80	636	1,966	134	.....	.....	.....
France	23,172	19,710	28,166	27,902	28,344	17,894	12,721	$23,925	$25,487
Germany	21,038	25,662	24,147	26,649	34,750	18,484	10,611	.....	.....
England	890	1,533	1,743	2,838	927	1,139	1,090	3,961	645
China	1	409	1,003	824	727	837	1,399	1,630	1,299
Hongkong	456	997	776	1,062	1,160	583	2,433	1,382	2,460
Japan	236	466	324	486	391	456	598	933	2,216
All other	204	291	524	395	225	290	77	297	115
Total	46,787	49,230	57,039	61,031	68,780	39,909	28,983	32,128	32,222

[1] Not stated separately after 1918.

Imports for consumption—Revenue—Dice, dominoes, draughts, chessmen, chess balls, and billiard, pool, and bagatelle balls and poker chips, of ivory, bone, or other materials.

Fiscal year.	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
1908	50 per cent	$28,288	[1] $14,134	50 per cent ad valorem.
1909	....do	23,799	11,899	Do.
1910	....do	47,759	23,879	Do.
1911	....do	49,998	24,999	Do.
1912	....do	57,147	28,573	Do.
1913	....do	61,108	30,554	Do.
1914	....do	[1] 67,789	[1] 33,887	Do.
1915	....do	40,433	20,216	Do.
1916	....do	29,077	14,538	Do.
1917	....do	31,794	15,897	Do.
1918	....do	32,324	[1] 16,159	Do.
1919	....do	29,223	16,160	Do.
1920	....do	50,061	[1] 25,080	Do.
1919[2]	....do	57,789	[1] 28,893	Do.
1920[2]	....do	55,464	[1] 27,733	Do.
1921[3]	....do	108,191	54,095	Do.

[1] Includes negligible amount imported from Cuba.
[2] Calendar year.
[3] Six months ended June 30, 1921.

Rates of duty—Dice, draughts, chessmen, chess, billiard, pool, and bagatelle balls, and poker chips of ivory, bone, etc.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	424	Dice, draughts, chessmen, chess balls, and billiard and bagatelle balls, of ivory or bone.	50 per cent ad valorem.
1890	435	Dice, draughts, chessmen, chess balls, and billiard, pool, and bagatelle balls, of ivory, bone, or other materials.	Do.
1894	320	.....do.....	Do.
1897	417	.....do.....	Do.
1909	430	Dice, dominoes, draughts, chessmen, chess balls, and billiard, pool, and bagatelle balls, of ivory, bone, or other materials.	Do.
1913	341	Dice, dominoes, draughts, chessmen, chess balls, and billiard, pool, bagatelle balls, and poker chips, of ivory, bone, or other materials.	Do.

COURT AND TREASURY DECISIONS.

Pearl draughts or checkers, in chief value of mother-of-pearl, are dutiable under this paragraph and not as manufactures of pearl under paragraph 369. (Abstract 38337, of 1915.) *Chessboards and chessmen*, packed together, are dutiable as entireties under this paragraph rather than according to the component material of chief value under other paragraphs. (Abstract 40430, of 1916.)

TOYS.

SUMMARY.

There were 290 establishments in the toy industry in 1914, having a capital of $10,484,000, employing 7,887 wage earners and turning out products valued at $13,757,000. New York was the leading State in the toy industry, having 97 establishments credited with products valued at $3,713,000; Massachusetts was second with 18 establishments and a product of $2,536,000. Ohio, Pennsylvania, and Connecticut were also leading States in toy manufacture.

The American toy industry has developed in the face of severe competition from Germany, the world's leading toy maker prior to the war. In 1904 the value of products of the American toy industry was approximately $5,600,000, while the value of imports was nearly $5,000,000. In 1909 the value of domestic products increased to $8,264,135, and in 1914 to $13,757,000. The ratio of imports to domestic products was 80.2 per cent in 1909, but decreased to 66 per cent in 1914.

Imports for the calendar year 1919 were valued at $2,952,319, which was approximately only one-third the value of imports for the fiscal year 1914. The domestic industry has developed greatly since 1914, but exact figures will not be available until the present census reports are completed. The Toy Manufacturers' Association estimates the total value of toys produced in the United States in 1919 at about $30,000,000. The number of doll factories increased from 10 or 12 to probably 150, but the increase in other lines has not been so great. Exports from the United States in the calendar year 1919 reached a total of $2,869,529, which was almost exactly equal to the value of imports. Germany was the principal exporter to the United States prior to the war, but Japan is now in the lead, having gained this position since exports from Germany were cut off.

It appears that domestic production and exports have increased greatly since 1914, while imports have decreased. However, imports are again on the increase, and there is not sufficient data available upon which to base the assumption that the situation will remain so favorable for the American toy industry in the immediate future. Exports from Germany will no doubt increase, but may not regain their former volume for some time. Japan exported toys into the United States in the calendar year 1919 valued at $1,752,746.

A comparison of prices on dolls indicates that the American doll makers are being very much undersold for the year 1920. This is also true of celluloid toys and trains. However, dolls are said to be the most important item in the toy trade. It is said that toy buyers would not go abroad to buy if they could not secure dolls. They go to buy dolls and then pick up many other toys.

American dolls have generally been considered inferior in the past to German dolls, but at the present time fine-quality dolls with American-made bisque heads are being made in this country. Costs may become somewhat lower as the domestic manufacturers become more efficient, but the present difference in prices is great.

Summary table—Toys (including dolls and parts of).

Year.	Domestic production.	Imports for consumption.	Domestic exports.	Amount of duty.	Ratio to production.	
					Imports.	Exports.
					Per cent.	*Per cent.*
1910	[1] $8,264,000	$6,628,683	$1,670,046	$2,320,039	80.2	20.2
1911		8,159,244	1,013,104	2,855,521		
1912		7,881,298	645,287	2,758,383		
1913		7,923,895	828,518	2,773,362		
1914	13,757,000	9,090,972	809,120	3,181,815	66.0	5.9
1915		7,898,535	929,864	2,764,388		
1916		3,384,414	2,030,089	1,184,545		
1917		1,492,541	1,806,174	522,379		
1918		2,009,014	2,023,624	703,146		
1919		762,458	[2] 2,869,529	266,860		
1920		5,780,155		2,023,054		
1919 [2]		2,835,525	2,869,529	992,433		
1920 [2]		9,687,526	4,189,592	3,380,628		

[1] Census of 1909. [2] Calendar year.

General Information.

1913 TARIFF PARAGRAPH.

342. Dolls, and parts of dolls, doll heads, toy marbles of whatever materials composed, and all other toys, and parts of toys, not composed of china, porcelain, parian, bisque, earthen or stone ware, and not specially provided for in this section, 35 per cent ad valorem.

DESCRIPTION.

The articles made by establishments assigned to "Toys and games" are numerous. Among the principal classes included under this heading are: Dolls, electrical and mechanical toys, wooden toys, and indoor games. For the purposes of this survey it is not considered essential to enumerate the hundreds of individual items included under toys, but rather to deal with the industry as a whole, or with particular classes, such as dolls or electrical toys.

It should be noted that toys and games to the value of $1,609,555 in 1914 and of $1,156,411 in 1909 were reported by establishments assigned to other industries, principally hardware, planing mills, tinware, sawmills, wooden goods, furniture, etc. On the other hand, there is considerable overlapping between toys and games and such other industries as "paper goods, not elsewhere specified," "leather goods, not elsewhere specified," "carriages and sleds, children's," and "wood, turned and carved," the amount of which was not always disclosed by the census returns.

For practical purposes a toy may be defined as "an article which has been designed primarily for the amusement of a child." Some articles may be known commercially as toys which are not entirely covered by this definition. The greatest difficulty in classification is experienced with articles which emerge from the class of "toys" into the class of "real" articles used by adults, such as paint boxes, musical instruments, base balls, games, and articles of that description. The decision is based upon one or the other of the two principles above stated.

DOMESTIC PRODUCTION.

(*a*) *Size and importance of the industry.*—The census of 1914 reports 290 establishments engaged in the manufacture of toys and games, capitalized at $10,484,000, employing 7,887 wage earners, and credited with a product valued at $13,757,000.

(*b*) *Materials and methods of production.*—The toy industry is one requiring a great deal of hand labor. This is particularly true in Germany, where the industry, except in the metal toy factories of Nuremberg, has been entirely a home industry, engaged in at times by four generations working in the same home from 10 to 13 hours a day. In the United States, where the industry has developed mainly in the last 20 years, the manufacture of toys is carried on principally in factories. Every mechanical device that would aid in quantity production is employed, and constant improvements are being added. Child labor is not employed extensively in the United States.

The value of products of the toy industry in 1914 was $13,757,000, of which $7,978,000 was added by manufacture. From this comparison it appears that the material cost is not the principal cost of the toys produced.

Machinery is used in stamping out parts for metal toys and in cutting and finishing parts for wooden toys. In doll making machinery is used in cutting and sewing dolls' clothes, in making heads and bodies, and power-air brushes are used in painting heads and cheeks. A great deal of handwork is required, however, in making and finishing the head and in assembling, clothing, and packing the dolls. It is obvious that extreme standardization and the use of mechanical equipment will still leave a great deal of handwork to be done in decorating and assembling toys and dolls of practically all kinds.

The American manufacturer has at present several advantages in the manufacture of some lines of toys. He has developed new mechanical, structural, and electrical toys, which are superior to those manufactured in any country. He has also applied machinery wherever possible to secure quantity production. However, he faces competition in many lines from countries where the industry is carried on with little or no overhead factory expense and at a very low cost of production, or in a home in which the entire family works long hours and ekes out only a meager existence.

(*c*) *Organization.*—The capital invested in the toy industry in 1914 was $10,484,000. There were 290 establishments reported, thus making the average individual capital $36,151. The development of the industry has been great since the beginning of the war, and doubtless the next census will show a marked increase in both the number of establishments and the capital engaged in the industry.

The number of establishments in 1914 owned by individuals was 111; by corporations 127; and by other forms of ownership, 52. The average number of wage earners in establishments owned by individuals was 1,030; by corporations, 6,242; and by others, 615. The value of products of establishments owned by individuals was $1,723,000; by corporations, $10,948,000; and by others, $1,086,000. It will be seen that the corporate form of ownership dominates the industry.

The size of establishments is indicated by the value of products turned out. In 1914 there were 80 with a product of less than $5,000;

92 with a product of $5,000 to $20,000; 83 with a product of $20,000 to $100,000; 34 with a product of $100,000 to $1,000,000; and only 1 with a product over $1,000,000. The majority of establishments were, therefore, those with a value of products of less than $20,000, while the establishments with a large product were few in number.

Likewise, the majority of establishments employed only a small number of wage earners; 14 employing none; 198 employing not over 20; 60 employing from 20 to 100; 18 employing over 100; while only 4 of the 18 employed over 250 wage earners. The majority, 64.9 per cent, of the wage earners were men; 30.5 were women; and only 4.6 per cent were under 16 years of age.

(*d*) *Geographical distribution.*—The value of products of five States exceeded $10,000,000 in 1914. These States, with the number of establishments and value of products of each in 1914 were: New York, 97 establishments, with a product of $3,713,000; Massachusetts, 18—$2,536,000; Ohio, 36—$1,909,000; Pennsylvania, 36—$1,769,000; Connecticut, 14—$1,040,000. Some of the other States, with the number of establishments in each were: Michigan, 7; Indiana, 8; Illinois, 14; New Jersey, 13; New Hampshire, 7; and Vermont, 4.

(*e*) *History of the industry.*—The tariff rate has remained at 35 per cent ad valorem on ordinary toys since 1883, except for three years under the act of 1894, when it was reduced to 25 per cent. The development of the industry has not been affected, therefore, by fluctuations in the tariff rate. There has, however, been a marked increase in imports.

In 1879 the value of products of the industry reached a total of $1,562,513. By 1899 this had increased to a total of $4,000,000. From 1899 to 1914 the total value of products more than trebled, reaching an approximate total of $14,000,000. Imports increased in value from about $2,500,000 in 1899 to approximately $8,600,000 in 1914.

(*f*) *Domestic production and consumption.*—The American market for toys is perhaps the best in the world. Germany consumes only a very small part of her toys. Her annual production before the war was estimated at about $33,000,000, while her exports in 1913 were valued at over $24,000,000, of which about one-third went to the United States. On the other hand, the United States added imports valued at nearly $9,000,000 to her domestic production of $14,000,000, exporting toys valued at only $769,000. It would appear that the toys consumed in the United States in 1914 were nearly double the value of toys consumed in Germany, the world's greatest toy maker before the war.

Although imports from Germany were cut off during the war, the American manufacturers met the increased domestic demand and were able to export toys valued at $2,000,000 in 1918.

(*g*) *Domestic exports.*—Prior to the war exports of toys from the United States averaged somewhat less than $1,000,000 annually. In the year 1916 the value of exports reached a total of $2,030,089. The year 1917 recorded a slight decline, while the year 1918 was practically the same as 1916.

Toys were exported to Canada, England, Cuba, Australia, Germany (before the war), and other countries. Exports of toys were not separately stated prior to 1918, but in 1918 toys were divided into dolls, $356,363; mechanical toys, $198,792; and all other, $1,468,469.

The value of exports of dolls and parts of dolls for the calendar year 1919 was $454,770. Exports of mechanical toys were valued at $224,628, and all other toys were valued at $2,190,131.

FOREIGN PRODUCTION.

(*a*) *Germany.*—Before the war Germany was the world's greatest toy maker. Nuremberg and Sonneberg are the two principal centers of the German toy industry. Nuremberg is principally engaged in the manufacture of metal toys, of "lead, tin, and pewter soldiers; of mechanical toys; of animals that walk and birds that fly; of dogs that bark and dolls that talk, * * *." Sonneberg is the center of the wooden-toy industry.[1]

At least 100,000 persons were employed in the manufacture of toys in Germany, the districts of Nuremberg and Sonneberg employing about 30,000 operatives each. The annual production was estimated at about $33,000,000. The exports of 1913 were valued at $24,594,000. The United States was Germany's best customer, taking nearly one-third of the total exports, while the United Kingdom was second, taking one-fourth of the total exports.[2]

In Nuremberg the metal toys are produced largely in factories, there being about 200 factories located in Nuremberg and Furth, which is 6 miles distant from Nuremberg. Outside of Nuremberg practically all the toys produced in Germany are made in the workmen's homes. The entire family is employed, usually on one article on which the family has specialized for many generations. It is not uncommon to find several generations at work in one home.

The present condition of the German toy industry is not known in detail, but it suffered heavily by the war. Exports to the United States and the United Kingdom, which represented approximately one-third and one-fourth, respectively, of the total exports, were cut off. Less than 5 per cent of her exports went to her allies before the war, and a little over 7 per cent to the Scandinavian countries, the Netherlands, and Switzerland. The overseas markets were closed during the war, and the exports to neutral countries declined.[3]

In Sonneberg a company was formed to assist the destitute toy makers by employing them in war trades. A suggestion has been made to inaugurate a "day of gifts" to be celebrated in the same manner as Santa Claus day, but to be held in midsummer, in order to stimulate home consumption of toys.

There is a shortage of textiles used in the doll industry. The increase in factory costs has been great—higher wages and shorter hours being the rule. The shortage of coal has cut down factory production. The greatest difficulty the industry will face will be the problem of regaining its lost markets. It will have to face the increased production of toys in the United States and Japan, whose markets are well supplied and who are entering the export field, particularly Japan. Until the German toy makers can regain lost markets it is safe to say that the industry can not attain its prewar proportions and prosperity.

(*b*) *Japan.*—The toy industry in Japan has greatly increased since the beginning of the war. Mr. M. Iketani, writing in the Japan Sales-

[1] Harper's Bazar, January, 1911.
[2] Miscellaneous Series No. 65, 1918, Department of Commerce.
[3] Miscellaneous Series No. 65, Department of Commerce.

man, January, 1918, states that the annual production of toys had reached a value of 10,000,000 yen (about $5,000,000), of which 8,000,000 yen was exported. The following figures are taken from Official Japanese Statistics for Exports:[4]

[Yen=$0.50.]

	1916	1917	1918
Total export	$3,820,000	$4,204,759	$5,095,014
Export to United States	1,215,008	1,895,249	810,999

Exports to China, British India, and Australia exceeded $500,000 in value to each country in 1918. For the 10 months ending October 31, 1919, the export of toys reached a total of $4,699,695.

It will be seen from the above figures that the Japanese toy industry grew rapidly. Production in 1918 evidently exceeded the figure quoted by Mr. Iketani, which was no doubt for the year 1917. Tokyo is the principal center of the industry, producing about one-half of the total. Osaka is second, producing toys valued at over $1,000,000; Aichi is third, with a value of about $500,000.

The toy industry in Japan is similar to that in Germany in that it is carried on almost entirely in the home. This keeps the cost at a low level. Dolls are made in the pottery centers as a by-product. When toys are made in factories, the cost is quite low, the adult workman averaging 65 cents per day in wages, according to an extract from Commerce Reports, February 26, 1920. Japan also has the possibilities of developing a good market in her own part of the world, as well as in South America, Europe, and Africa.

(c) *France.*—It was estimated that one-third of the total number of toys sold in France in the year 1913, amounting to approximately $5,000,000 in value, was of German origin. Of all imported those from Germany amounted to four-fifths. It was the consensus of opinion among the larger toy dealers that 25 per cent of the finished toys sold in France before the war were of German production and that 50 per cent of all toys and toy parts were "made in Germany."

The finished toys of German importation consisted mostly of mechanical and rubber toys, while such parts as doll heads and glass eyes were also imported. Frequently a finished article put out as a French product consisted mainly of parts or pieces of a set made in Germany but assembled and packed in France.[5]

The following table[6] shows the value of imports into and exports from France for the years stated, and indicates that exports of toys are much larger than imports. Exports went mainly to England.

	1912	1914	1916	1918
Imports	$3,292,194	$1,158,000	$650,217	$337,750
Exports	10,257,757	6,819,462	7,626,202	5,758,348

[4] Annual Return of the Foreign Trade of the Empire of Japan, 1918.
[5] Notes from Commerce Reports, Apr. 7, 1919.
[6] Statistics taken from "Documents Statistiques sur le Commerce de la France;" calendar years; franc=$0.193.

Imports into the United States from France, as indicated by Commerce and Navigation of the United States, have fluctuated in value from about $200,000 to $100,000, averaging about $150,000 annually. Exports from the United States to France have been small.

(d) *England.*—While an attempt has been made to stimulate the production of toys in England as in other countries, the statistics as here given show only a small difference between the value of imports and exports. In 1914 exports exceeded imports in value, while in 1918 imports slightly exceeded exports in value. France took the place formerly occupied by Germany as the leading source of imports into the United Kingdom. Exports went principally to the British Possessions.

	1914	1917	1918
Imports from [1]—			
Total	$3,408,598	$1,262,536	$2,177,460
Germany	2,358,992	3,280	.....
France	433,385	1,070,679	2,073,412
Japan	143,836	103,963	74,487
United States	271,205	69,610	18,390
Exports to [1]—			
Total	4,071,489	2,567,322	1,952,902
France	124,733	232,580	214,948
United States	706,251	466,941	119,779
Argentina	84,322	153,105	176,304
British possessions	2,496,159	1,380,573	1,137,286

[1] From "Annual Statement of the Trade of the United Kingdom," 1918, calendar years; pound sterling=$4.8665.

IMPORTS.

Imports for consumption of toys were valued at $6,628,683 in the fiscal year 1910. The year 1911 increased the total value to $8,159,244. The next two years showed a small decrease, the total falling a little below $8,000,000, but in 1914 the high total of $9,090,972 was reached. The ratio of imports to domestic production decreased from 80.2 per cent to 66 per cent from 1910 to 1914.

The decline in the value of imports has been rapid since 1915, and the low mark was reached in 1917, with a value of $1,492,541. The year 1918 recorded imports of toys valued at $2,009,014.

Germany dominated the American import trade before the war, furnishing about 90 per cent of the total. Imports from Japan have shown a remarkable growth, increasing from a value of $197,302 in 1910 to a total of $1,910,417 in 1918, the value having passed the half-million mark in 1916. The United Kingdom, France, and Austria-Hungary were also exporters to the United States.

Imports of toys were all grouped together under one heading prior to 1912. Since 1912 dolls have been separately stated, their average import value from 1912 to 1915, inclusive, being about $1,500,000.

In the fiscal year 1917 the imports of dolls amounted to only $123,134, but the imports of dolls in the calendar year 1919 were again heavy, $1,232,344; in fact, they were nearly equal in value to the imports of dolls in prewar years. The imports from July to

December, 1919, reached a total value of $1,026,975, of which $451,826 came from Germany and $742,537 from Japan. Before the war nearly all the imported dolls came from Germany, but at the present time Japan appears to be the principal exporter to the United States.

Imports of all other toys and parts have not increased so greatly since the war as have dolls. Their average value before the war was about $6,500,000 annually; in 1917 their value was less than $1,500,000; while in the calendar year 1919 they reached a total value of $1,719,975, of which $1,010,209 came from Japan and $ 31,904 from Germany. July to December were the months of largest importation.

PRICES.

The comparative prices on similar dolls given in this discussion should be considered merely as an indication of the competitive situation as it existed in the spring of 1920. The data does not cover a large number of domestic manufacturers and importers, nor does it cover a wide range of items. It is believed, however, that the limited data presented is fairly representative of the entire situation.

Prices, in dollars per dozen.

DOLLS,[1] JOINTED.

Approximate size (inches).	Bisque heads.		Composition heads, American: Lowest net jobber's price.
	American: Lowest net jobber's price.	Imported: Estimated landed cost plus 20 per cent.	
20	$63–$81	$24.20–$46.46	$54
24	84–108	31.56– 65.31	$60– 72
30	186	57.94–134.86	126
CHARACTER BABIES.			
14 and 15	$33–$72	$13.92–$50.64	$32.00–$33
18	75– 93	31.14	36.50– 54
22	126	44.61–104.76	68.00– 78

[1] Some of the finest quality imported dolls now on hand or which are now being distributed were imported at the low figure or at about an average between the high and low figures. Shipments at the high quotations are not large. Japanese bisque dolls generally range considerably higher than German dolls. The wide range in prices is frequently partly due to a difference in construction. There appears to be a wide range, however, on very similar items.

Explanation of methods followed in compiling doll prices.—Figures for imports were collected from invoices of actual shipments of goods received, except in one case quotations on a shipment of samples was included, and these quotations were high. The exchange value of marks and yen as indicated by the consular invoice was the value used in converting to dollars. The case charges vary considerably, but 6 per cent was taken as a fair average charge. This charge is added to the purchase price, and this total is the amount upon which duty and other charges are assessed.

Landing charges to New York were estimated at 64 per cent of the total amount upon which duty is assessed for German goods, and at

80 per cent for Japanese goods. The landing charges for German goods were divided up about as follows: Duty, 35 per cent; inland freight, 10 per cent; ocean freight, 15 per cent; insurance, 2 per cent; cartage, legalization, entry charges, etc., 2 per cent. The landing charges for Japanese goods are similarly divided, but are higher. These charges are based upon freight rates as they were in the spring of 1920.

Some German importers claim that their landing charges are much higher than 64 per cent, but this appears to be due to jobber's commissions on the other side, or to the fact that they made settlement in marks owned at a higher value than the exchange value at the time of shipment. This charge is thought to be a fair landing charge at present freight rates for direct importers of German goods.

The American prices quoted are the lowest net wholesale selling price to jobbers. Manufacturing costs per dozen were not available in some cases. In answer to the argument that American manufacturers should lower their prices, they assert that they are scarcely making a fair profit.

For the purposes of comparing American jobbers' prices with imported prices, 20 per cent was added to the estimated landed cost of imported articles. This should yield a fair profit to the importer, if not a large profit.

Description of the dolls quoted.—The jointed bisque dolls have moving glass eyes, usually with eyelashes (American manufacturers have been using celluloid eyes, but are now using glass eyes also); mohair sewed wigs, occasionally human-hair wigs; composition fully jointed legs and arms and composition bodies (papier-mâché is used largely by the German manufacturers); and they are dressed only with a chemise.

The character baby dolls have curved arms and legs, jointed only at the hips and shoulders, and their wigs are usually short or bobbed. Otherwise they are generally similar to the jointed dolls.

The American dolls with composition heads and moving eyes are generally considered inferior to dolls with bisque heads, but the comparison is given to indicate the comparative prices of this kind of doll with the highest quality imported bisque dolls. The American dolls with painted eyes and cork-stuffed bodies, usually without hair, are in a class entirely by themselves at the present time, and prices are not quoted in this discussion.

The articles quoted compare almost exactly as to size, but the Japanese toys are more fragile. They are, however, more profusely decorated than the American, and hand painting is costly to the American manufacturer.

The Japanese celluloid toys as priced at the present time compete with the American in the 5 and 10 cent stores, which have been the largest buyers of celluloid toys. The above comparisons show that the margin of profit on a gross of American celluloid toys retailed in the syndicate stores is very small, and in some cases they can not be sold at all. In the department stores quality counts for more than price to many customers, and the higher priced American toys frequently sell more readily at a higher price than the Japanese, because they are more substantial; particularly is this true when the two are placed on the same sales counter.

Trains.—Quotations on mechanical and electrical trains would disclose individual firm prices and they are, therefore, withheld. However, a standard American mechanical train, consisting of an iron locomotive and three stamped sheet-steel cars and a tender, was compared with a similar imported train. The comparison was quite exact. The estimated landed cost of the imported train, plus 20 per cent, was substantially under the lowest net jobber's price for the American. A similar comparison with a standard electric train also showed the imported to be under the American price.

Other toys.—Quotations on American tin toys were available, but no imported tin sets were found. Germany is said to be short of white tin used in the lithographed tea and coffee sets.

There is competition in many other lines of toys, but dolls are said to be one of the controlling factors in the toy trade, and competition appears to be most keen in dolls.

COMPETITIVE CONDITIONS.

From a review of the imports of dolls and toys during the calendar year 1919, particularly the latter part of the year, it appears that Japan and Germany are the principal competitors of the American manufacturers in the domestic market, with Japan in the lead at the present time.

The total importation of dolls and toys from July to December, 1919, was nearly $2,500,000. Exports from the United States for the same period amounted to $1,847,875.

Until the next census is completed no accurate estimate of the present volume of domestic production can be made, but the increase has been great. The Toy Manufacturers Association estimates that the number of doll manufacturers alone has probably increased from 10 or 12 to 150. There has also been an increase in the number of manufacturers of mechanical and structural toys. The value of products of the entire industry in 1914 was nearly $14,000,000. The toy association estimates the value of products in 1919 at a total of $30,000,000.

Information upon which to base an accurate statement of future foreign competition is not available. Doubtless there is at present a smaller production of toys in Germany than before the war, but this may be only a temporary condition. On the other hand, Japan has increased her production and exportation of toys, and is able to quote prices to meet competition.

The American manufacturer seems to have succeeded mainly in the production of new kinds of toys and in the application of the principles of quantity production to certain wooden and metal toys. The industry in Germany and Japan is characterized by the home-work system, and before the war in the factories long hours and low wages prevailed. In Japan at the present time (Commerce Reports, Feb. 26, 1920), the adult factory workman averages 65 cents a day in wages. Present factory wages and hours in Germany are not known.

TARIFF HISTORY.

Dolls and toys were enumerated in the tariff act of 1894 at 25 per cent ad valorem. The act of 1897 raised the duty to 35 per cent, which was the rate prevailing before the act of 1894. There has been no change in the duty on ordinary toys since the act of 1897.

The values of imports and domestic products have increased at the same time, but domestic products appear to be gaining on imports in meeting the domestic demand for toys. It is obvious, however, from reference to the statistics on page 12, that the toy industry has had, in the past, very severe competition to meet.

Production in the United States—Toys and games.

[From Federal Census.]

	Value.		Value.
1899	$4,010,000	1909	$8,264,000
1904	5,578,000	1914	13,757,000

Production in the United States, by States, 1914—Toys and games.

	Value.		Value.
Connecticut	$1,040,000	New York	$3,713,000
Illinois	371,000	Ohio	1,909,000
Indiana	395,000	Pennsylvania	1,769,000
Iowa	69,000	Rhode Island	21,000
Maryland	68,000	Vermont	160,000
Massachusetts	2,536,000	All other	361,000
Michigan	529,000		
New Hampshire	175,000	Total	13,757,000
New Jersey	641,000		

Imports by countries.

TOYS—DOLLS AND PARTS OF.

[Fiscal years.]

Imported from—	1912 [1]	1913	1914	1915	1916	1917	1918	1919 [2]	1920 [2]
Germany	$1,384,372	$1,537,964	$1,791,913	$1,661,511	$617,333	$3,294	.....	$451,826	.....
France	12,578	8,776	12,286	5,699	6,166	8,508	$20,989	20,432	.....
Austria-Hungary	5,435	6,641	4,592	805	3,110	.....	.....	.....	.....
United Kingdom	3,238	1,010	2,484	1,177	162	631	1,962	9,041	.....
Japan	4,189	1,505	2,925	4,250	7,471	108,608	474,882	742,537	.....
All other	12,480	7,288	2,296	24,689	38,028	2,093	2,159	8,508	.....
Total	1,422,292	1,563,184	1,816,496	1,698,131	672,270	123,134	499,992	1,232,344	$2,839,532

ALL OTHER TOYS.

[Fiscal years.]

Imported from—	1910 [2]	1911 [2]	1912	1913	1914
Austria-Hungary	$158,870	$155,757	$174,646	$178,662	$177,809
Belgium	56,927	48,966	45,142	57,962	69,092
France	169,957	224,517	169,591	156,316	206,194
Germany	5,908,092	7,078,880	5,596,757	5,362,810	5,926,941
England	78,909	112,637	144,751	285,849	420,859
Japan	195,302	295,641	320,241	301,249	434,006
All other	18,224	48,437	20,162	30,423	32,622
Total	6,585,781	7,964,835	6,471,290	6,372,371	7,267,523

Imported from—	1915	1916	1917	1918	1919 [2]	1920 [2]
Austria-Hungary	$113,922	$25,572	$2,996	.....	$3,982	.....
Belgium	22,531	.....	.....	.....	4,805	.....
France	156,507	98,554	101,276	$44,395	66,037	.....
Germany	5,125,764	1,758,663	15,751	.....	531,904	.....
England	435,299	137,306	74,154	26,533	28,577	.....
Japan	470,345	494,248	1,097,744	1,435,535	1,010,209	.....
All other	62,864	30,431	27,082	22,290	74,461	.....
Total	6,387,232	2,544,774	1,319,033	1,528,753	1,719,975	$7,898,162

[1] Included in "All other toys" prior to 1912. [2] Calendar year. [3] Includes dolls and parts of.

Imports for consumption—Revenue.

TOYS (INCLUDING DOLLS AND PARTS OF).

Fiscal year.	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
				Per cent.
1907	35 per cent	$6,929,841	$2,425,444	35
1908	do	7,187,482	2,515,618	35
1909	do	4,860,017	1,701,002	35
1910	do	6,628,683	2,320,039	35
1911	do	8,159,244	2,855,521	35
1912	do	7,881,298	2,758,383	35
1913	do	7,923,895	2,773,362	35
1914	do	9,090,972	3,181,815	35
1915	do	7,898,535	2,764,388	35
1916	do	3,384,414	1,184,545	35
1917	do	1,492,541	522,379	35
1918	do	2,009,014	703,146	35
1919	do	762,458	266,860	35
1920	do	5,780,155	2,023,054	35
1919 [2]	do	2,835,525	992,433	35
1920 [2]	do	9,687,526	3,380,628	35
DOLLS AND PARTS OF. [1]				
1912	35 per cent	$1,405,243	$191,835	35.00
1913	do	1,585,852	555,048	35.00
1914	do	1,816,930	635,925	35.00
1915	do	1,692,785	592,474	35.00
1916	do	678,005	237,301	35.00
1917	do	127,509	44,628	35.00
1918	do	492,178	172,262	35.00
1919 [2]	do	1,205,215	421,825	35.00
1920 [2]	do	2,593,108	907,588	35.00
1921 [3]	do	641,424	224,498	35.00
FROM CUBA (RECIPROCITY TREATY, DEC. 27, 1903).				
1914	35 per cent less 20 per cent	6	1	28.00
1915	do	1		
ALL OTHER TOYS AND PARTS OF, NOT COMPOSED OF RUBBER, CHINA, PORCELAIN, PARIAN, BISQUE, EARTHEN, OR STONE WARE, N. S. P. F., INCLUDING TOY MARBLES OF WHATEVER MATERIAL COMPOSED.				
UNDER GENERAL TARIFF.				
1908	35 per cent	$7,187,469	$2,515,614	35.00
1909	do	4,859,986	1,700,995	35.00
1910	do	6,628,674	2,320,036	35.00
1911	do	8,158,625	2,855,518	35.00
1912	do	6,475,849	2,266,547	35.00
1913	do	6,338,037	2,218,313	35.00
1914	do	7,273,963	2,545,887	35.00
1915	do	6,205,460	2,171,911	35.00
1916	do	2,706,405	947,241	35.00
1917	do	1,364,927	477,724	35.00
1918	do	1,516,794	530,877	35.00
1919 [2]	do	1,630,309	570,608	35.00
1920 [2]	do	7,094,341	2,483,019	35.00
1921 [3]	do	2,690,172	941,560	35.00
FROM PHILIPPINE ISLANDS (ACTS OF MAR. 3, 1905; AUG. 5, 1909; AND OCT. 3, 1913).				
1908	75 per cent of 35 per cent	$1		
1909	do	19	$4	26.25
1911	Free	303		
1912	do	2		
1913	do	5		
1917	do	12		
1918	do	22		
1920 [2]	do	2		

[1] Included with "All other toys" prior to 1912.
[2] Calendar year.
[3] Six months ended June 30, 1921.

Imports for consumption—Revenue—Continued.

ALL OTHER TOYS AND PARTS OF, NOT COMPOSED OF RUBBER, CHINA, PORCELAIN, PARIAN, BISQUE, EARTHEN, OR STONE WARE, N. S. P. F., INCLUDING TOY MARBLES OF WHATEVER MATERIAL COMPOSED—Continued.

FROM CUBA (RECIPROCITY TREATY, DEC. 27, 1903.)

Fiscal year.	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
				Per cent.
1908	35 per cent less 20 per cent	$11	$3	28.00
1909	do	6	1	28.00
1910	do	9	2	28.00
1911	do	8	2	28.00
1915	do	6	1	28.00
1916	do	4	1	28.00
1917	do	93	26	28.00
1918	do	20	5	28.00
1920[1]	do	75	21	28.00
	DUTY REMITTED.			
1909	For use of foreign diplomatic officers	$5		
1911	Sec. 23, act of Aug. 5, 1909	308		
1912	do	202		
1914	For use of foreign diplomatic officers	72		
1915	do	283		

Domestic exports.

TOYS (INCLUDING DOLLS AND PARTS OF).[2]

Exported to—	Fiscal year.								
	1910	1911	1912	1913	1914	1915	1916	1917	1918
Germany	$236,475	$64,942	$34,704	$29,900	$24,599	$782			
England	679,418	217,999	110,978	115,347	114,779	288,157	$717,338	$42,025	$5,864
Canada	179,763	216,607	213,394	327,488	349,676	321,632	594,380	705,550	790,248
Cuba	37,668	40,415	22,729	34,352	43,862	57,207	127,823	205,149	205,219
Australia	111,840	94,241	35,631	40,427	57,193	56,280	98,359	165,956	93,227
All other	424,882	388,900	227,851	281,004	219,011	205,806	492,189	687,494	929,066
Total	1,670,046	1,023,104	645,287	828,518	809,120	929,864	2,030,089	1,806,174	2,023,624

DOLLS AND PARTS OF.

Exported to—	Calendar year.		Exported to—	Calendar year.		
	1918	1919		1918	1919	1920
Canada	$70,599	$122,688	Chile	$35,112	$21,814	
Mexico	26,670	52,524	British South Africa	34,049	12,770	
Cuba	27,878	56,607	All other	59,029	120,718	
Argentina	11,200	17,448				
Brazil	27,682	50,201	Total	292,219	454,770	$539,821

[1] Calendar year.

[2] The exports of toys are separately stated after 1918.

Domestic exports—Continued.

MECHANICAL TOYS.

Exported to—	Calendar year.		Exported to—	Calendar year.		
	1918	1919		1918	1919	1920
England	$12	$11,399	Australia	$9,966	$13,003	
Canada	58,975	97,087	New Zealand	2,004	6,974	
Mexico	15,531	10,643	All other	55,209	51,028	
Cuba	21,489	24,631				
Argentina	3,784	9,863	Total	166,970	224,628	$471,639

ALL OTHER TOYS.

Exported to—	Calendar year.		Exported to—	Calendar year.		
	1918	1919		1918	1919	1920
Belgium		$44,756	Colombia	$7,674	$22,828	
Spain	$10,383	30,726	Uruguay	8,512	25,751	
England	1,066	72,810	China	17,816	26,944	
Canada	570,095	872,506	Philippine Islands	68,911	41,828	
Panama	8,637	21,449	Australia	50,085	107,169	
Mexico	81,325	179,088	British South Africa	27,353	73,701	
Cuba	104,939	201,479	New Zealand	23,571	44,494	
Argentina	25,003	78,065	All other	129,714	247,675	
Brazil	28,465	59,120				
Chile	33,374	39,742	Total	1,196,923	2,190,131	$3,178,132

Prices—Celluloid toys.[1]

DECORATED OR PAINTED TOYS.

Kinds or grades.	Jobber's price per gross.		Kinds or grades.	Jobber's price per gross.	
	American.	Japanese.		American.	Japanese.
Floaters, swans, ducks, and geese	$7.50	$4.00	Boats	$16.50	$9.00
	10.80	8.00	Clowns	18.00	7.75
	15.00	9.00	Santas	18.00	9.00
Chickens	12.00	7.25	Rabbits	18.00	7.25
Humpty dumpties	16.50	7.50	Rattles	21.00	8.50

ANIMALS.

Cows	$10.80	$8.25	Horses	$19.50	$16.50
	7.80	4.25		10.80	8.25
Elephants	7.80	4.25	Lions	10.80	8.25
Dogs	7.80	4.25	Camels	10.80	8.25
			Goats	18.00	8.25

DOLLS.

Statuary, approximate size in inches, movable arms only:			Movable arms and legs:		
3-inch	$7.50	$3.60	3-inch	$10.20	$3.75
5-inch	16.50	8.80	4-inch	16.50	7.00
5½-inch	22.50	15.75	4½-inch	18.00	8.50
			6-inch	33.00	18.00

[1] The Tariff Commission has been furnished a detailed display of celluloid toys, comparing Japanese and American toys, article for article, and giving the jobber's price per gross on each article. These quotations are taken from this display, which is on file in the commission's offices.

Rates of duty—Dolls, doll heads, and toys.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	425	Dolls and toys	35 per cent ad valorem.
1890	100	China, porcelain, parian, bisque, earthen, stone, and crockery ware, including * * * toys, * * *:	
		Painted, tinted, stained, enameled, printed, gilded, or otherwise decorated or ornamented in any manner.	60 per cent ad valorem.
		If plain white, and not ornamented or decorated in any manner.	55 per cent ad valorem.
	436	Dolls, doll heads, toy marbles of whatever material composed, and all other toys not composed of rubber, china, porcelain, parian, bisque, earthen or stone ware, and not specially provided for in this act.	35 per cent ad valorem.
1894	84	China, porcelain, parian, bisque, earthen, stone, and crockery ware, including * * * toys, * * * white, not changed in condition by superadded ornamentation or decoration.	30 per cent ad valorem.
	85	China, porcelain, parian, bisque, earthen, stone, and crockery ware, including * * * toys, * * * painted, tinted, enameled, printed, gilded, or otherwise decorated in any manner.	35 per cent ad valorem.
	321	Dolls, doll heads, toy marbles of whatever material composed, and all other toys not composed of rubber, china, porcelain, parian, bisque, earthen or stone ware, and not specially provided for in this act. This paragraph shall not take effect until Jan. 1, 1895.	25 per cent ad valorem.
1897	95	China, porcelain, parian, bisque, earthen, stone, and crockery ware, including * * * toys, toy tea sets, * * *:	
		Painted, tinted, stained, enameled, printed, gilded, or otherwise decorated or ornamented in any manner.	60 per cent ad valorem.
		If plain white and without superadded ornamentation of any kind.	55 per cent ad valorem.
	418	Dolls, doll heads, toy marbles of whatever materials composed, and all other toys not composed of rubber, china, porcelain, parian, bisque, earthen or stone ware, and not specially provided for in this act.	35 per cent ad valorem.
1909	93	China, porcelain, parian, bisque, earthen, stone, and crockery ware, including * * * toys, * * * all the foregoing wholly or in chief value of such ware; painted, colored, tinted, stained, enameled, gilded, printed, or ornamented or decorated in any manner; * * *.	60 per cent ad valorem.
	94	China, porcelain, parian, bisque, earthen, stone, and crockery ware, plain white, plain brown, including * * * toys, * * *, all the foregoing wholly or in chief value of such ware, not painted, colored, tinted, stained, enameled, gilded, printed, or ornamented or decorated in any manner: * * *.	55 per cent ad valorem.
	179	* * * toys, * * * made wholly or in chief value of tinsel wire, lame or lahn, bullions, or metal threads.	15 cents per pound and 60 per cent ad valorem.
	431	Dolls, and parts of dolls, doll heads, toy marbles of whatever materials composed, and all other toys, and parts of toys, not composed of china, porcelain, parian, bisque, earthen, or stone ware, and not specially provided for in this section.	35 per cent ad valorem.
1913	79	Earthenware and crockery ware composed of a nonvitrified absorbent body, including white granite and semiporcelain earthenware, and cream-colored ware, and stoneware, including * * * toys, * * * :	35 per cent ad valorem.
		If plain white, plain yellow, plain brown, plain red, or plain black, not painted, colored, tinted, stained, enameled, gilded, printed, ornamented, or decorated in any manner. * * *	
		If painted, colored, tinted, stained, enameled, gilded, printed, or ornamented or decorated in any manner. * * *	40 per cent ad valorem.
	80	China and porcelain wares composed of a vitrified nonabsorbent body which when broken shows a vitrified or vitreous, or semivitrified or semivitreous fracture, and all bisque and parian wares, including * * * toys, * * * :	
		If plain white, or plain brown, not painted, colored, tinted, stained, enameled, gilded, printed, or ornamented or decorated in any manner; * * *	50 per cent ad valorem.
		If painted, colored, tinted, stained, enameled, gilded, printed, or ornamented or decorated in any manner. * * *	55 per cent ad valorem.
	150	* * * toys, * * * made wholly or in chief value of tinsel wire, lame or lahn, or of tinsel wire, lame or lahn, and india rubber, bullions, or metal threads, not specially provided for in this section.	40 per cent ad valorem.
	342	Dolls, and parts of dolls, doll heads, toy marbles of whatever materials composed, and all other toys, and parts of toys, not composed of china, porcelain, parian, bisque, earthen or stone ware, and not specially provided for in this section.	35 per cent ad valorem.

NOTE.—The foregoing are the specific provisions for toys and dolls; rubber toys came within the general provision manufactures of rubber.

COURT AND TREASURY DECISIONS.

There has been no substantial change in the provisions for toys since the act of 1883. Yet under each of the acts there has been much litigation. Suggestions intended to make classification more certain were not deemed effective and have not been adopted in subsequent acts. For example, in 1909 (Tariff Hearings, 1908-09, vol. 6, p. 6618), it was proposed to insert in the tariff act a provision making the rate of duty on toys the same as that imposed upon "Miscellaneous manufactures of the material of which such toys are wholly or in chief value composed." The materials therein set forth (p. 6620), in the order of percentage, are metal, cotton, paper, rubber, wood, glass, china, fur, skin, wool, papier-mâché, celluloid, leather, silk, gallilith, pearl, bone, and willow, metal constituting 45 per cent of the total importations. The extent to which such a provision would go was indicated by the classification of toys of wool, which, being subject to compound duties, would have had not only to be valued to ascertain the ad valorem rate, but weighed in every case to determine the specific duty. The magnitude of that work is apparent from the volume of imports.

The scope of the provision has been somewhat limited by the definition of toys as playthings intended and designed for the amusement of children only and which by their very nature and character are reasonably fit for no other purpose. (Illfelder *v.* United States, 1 Ct. Cust. Appls. 109, 111, of 1910; Carsons *v.* United States, 2 Ct. Cust. Appls. 386, of 1911.) Cheapness does not determine classification (Pacific Mail Steamship Co. *v.* United States, 3 Ct. Cust. Appls. 102, of 1912; United States *v.* Bernard, 5 Ct. Cust. Appls. 202; United States *v.* Kramer, 5 Ct. Cust. Appls. 294, of 1914); nor does flimsiness (Thanhäuser, 159 Fed. 228, of 1908; Pacific Mail Steamship Co., 3 Ct. Cust. Appls. 102, of 1912); nor does their sale to or in toy shops (United States *v.* Cattus, 167 Fed. 532, of 1909; Hamburger *v.* United States, 2 Ct. Cust. Appls. 234, of 1911). But such limitations must yield to proof of commercial designation as toys. (Zeh *v.* Cadwalader, 151 U. S. 171; Pacific Mail Steamship Co. *v.* United States, 3 Ct. Cust. Appls. 102, of 1912.) By agreement between the Government and importers a decision of the Court of Customs Appeals (Illfelder *v.* United States, 7 Ct. Cust. Appls. 53, of 1916) upon so-called water-color boxes is not applied to paints or colors in wooden or paper boxes valued at less than 100 marks per gross, or in metal boxes valued at less than 25 marks per gross, or the equivalent in each case in francs. Such paints or colors are classified as toys. (T. D. 37168, of 1917.)

In a decision of the Supreme Court under the act of 1883, plates and mugs decorated with pictures and with the letters of the alphabet, intended for children, and known in trade as "A B C" plates and mugs, were held dutiable as decorated earthenware and not as toys. (Maddock *v.* Magone, 152 U. S. 368.) In cases under the acts of 1897 and 1909 china dolls and dolls' heads were held dutiable under the provision for dolls and doll heads.

Among articles recently held not to come within the provision for toys are cardboard bells painted and used in the manufacture of Christmas-tree ornaments (G. A. 8317; T. D. 38255); a bag of netting and red cotton material with head representing Santa Claus attached

to the top, and at the bottom two legs with feet intended as a container for small articles, such as candy, to be suspended on Christmas trees (Abstract 43770, of 1920); and strings of small hollow, globular articles of gilded glass with a hole running through the center, and hollow colored glass balls with a metal ring attached, also for Christmas-tree ornaments (Abstract 43423, of 1919), and flimsy baseballs in chief value of cotton (Abstracts 43595, 43596, of 1920). On the other hand, dolls in part of lace were held dutiable under paragraph 342 rather than as articles made in part of lace under paragraph 358 of the act of 1913. (Abstracts 43619, 43760, of 1920.) Toys of tinsel wire, lame or lahn, and india rubber are dutiable under paragraph 150 of the act of 1913; also toys of such materials and other component material if the combined values of the tinsel wire, lame or lahn, and india rubber exceed the value of the other component material. (T. D. 34027.)

Small sewing machines fitted for other purposes than the amusement of children do not come within the toy provision, but within the provision (par. 441 of the act of 1913) for sewing machines. (Abstracts 40043 and 40387, of 1916; Abstract 40753, of 1917; and Abstracts 43580, 43641, and 43766, of 1920.)

Whether such articles as knives, however small, should be regarded as toys is questionable. They have been classified both as toys and as knives. In G. A. 2492, T. D. 14809, knife and fork sets; and in G. A. 3482, T. D. 17165, table knives and forks not exceeding 5 inches in length, including the handle, were classified as toys. On the other hand, in G. A. 6264, T. D. 26996, minature penknives having a single blade, and in Kastor *v.* United States, 167 Fed. 993, small knives with odd-shaped handles which can not be effectively used for ordinary purposes as a pocketknife, but which were not in fact used as playthings, and neither kind of the knives being commercially known as toys, were held dutiable as penknives.

EMERY GRAINS, WHEELS, ETC.

[Par. 343. For treatment see par. 75.]

CURLING STONES, OR QUOITS, AND CURLING-STONE HANDLES.

SUMMARY.

The manufacture of curling stones is not an industry in the United States, and quoits are made to only a small extent by iron founders to satisfy the domestic demand.

Imports of curling stones come chiefly from the United Kingdom, whereas the quoits used in this country are mostly of domestic manufacture. Annual imports of curling stones and quoits, since 1907, ranged from $3,447 in 1914 down to $188 in 1919.

There is no indication that the demand for curling stones and quoits will ever be large enough to develop a manufacturing industry of importance in the United States, and as a possible source of import revenue these articles are insignificant.

Summary table—Curling stones, or quoits, and curling-stone handles.

Fiscal year.	Value (imports for consumption).	Equivalent ad valorem rate.
1910	$1,723	Free.
1911	1,781	Do.
1912	2,104	Do.
1913	2,684	Do.
1914	3,447	Do.
1915	1,259	Do.
1916	2,882	Do.
1917	2,427	Do.
1918	380	Do.
1919	188	Do.
1919 [1]	1,793	Do.
1920 [1]	3,315	Do.

[1] Calendar year.

NOTE.—Curling stones and handles are not manufactured in the United States.

GENERAL INFORMATION.

TARIFF PARAGRAPH, ACT OF 1913.

PAR. 470. Curling stones, or quoits, and curling-stone handles. Free.

DESCRIPTION.

A curling stone is a flattish round stone, about 9 inches in diameter, prepared by stone hewers, and weighs from 30 to 45 pounds. In shape a curling stone resembles a small convex cheese with a handle in the upper side.

Curling stones are employed in playing the game of "curling," a sport originating in Scotland, where it is played by all classes of people in winter; it is also played in England, Ireland, Canada, United

States, and other countries. In playing the game sides are made up, usually consisting of four against four, with a director, styled "skip," for each; after which a certain length of ice, of from 30 to 40 yards and 8 or 9 feet across, is chosen. This is called the "rink." Certain marks are then made at each end of the rink, consisting of several concentric rings, called "broughs," and a center, called a "tee." One on each side plays alternately, the chief object of the player being to hurl his stone along the ice toward the tee with proper strength and precision, and on the skill displayed by the players in placing their own stones in favorable positions or in driving rival stones out of favorable positions depends nearly all of the interest of the game.

A metal quoit, for outdoor sport, is a circular piece of iron from 4½ to 6 inches in external diameter, between 1 and 2 inches in breadth, and weighs from 1½ to 3 pounds. It is convex on the upper side and slightly concave on the under side, so that the outer edge curves downward and is sharp enough to cut into soft ground. Quoits for indoor sport are made of gutta percha.

Quoits are used in playing the game of "quoits." In the outdoor sport two pins, called "hobs," are driven part of their length into the ground some distance apart, and the players, who are divided into two sides, stand beside one hob and in regular succession throw their quoits (of which each player has two) as near the other hob as they can. The side which has the quoit nearest the hob counts a point toward game, or if the quoit is thrown so as to surround the hob it counts two.

DOMESTIC PRODUCTION.

The manufacture of curling stones is not an industry in the United States, the small domestic requirements being supplied by importation from Europe. Quoits are cast by iron founders in various parts of the country in sufficient quantities to satisfy the domestic demand.

Statistics of production and consumption are not available, but the amounts are small. Curling stones are used only where there is strong ice in areas sufficiently large to accommodate the game of "curling," and their sale, therefore, is limited practically to the States in the northern parts of the country. The quantities imported represent, practically, the amounts consumed. Quoits, on the other hand, are used in all parts of the country during the greater part of the year. However, the game of "quoits" is played to only a limited extent in the United States, it being most popular in the north-central and northeastern parts of the country. This, and the further fact that quoits being an almost compact mass of solid iron which with ordinary care lasts for generations, reduces the annual requirements for the article. The demand in this country for curling stones and quoits is small, the annual sales amounting possibly to $10,000.

Domestic exports.—The United States has no export trade in curling stones or quoits.

IMPORTS.

Customs officials do not distinguish between imports of curling stones and imports of quoits; separate statistics are therefore not available. Of the total annual importation of curling stones and quoits the largest quantity imported since 1894 occurred in 1914 and amounted to $3,447. In 1919 the total quantity imported amounted to only $188.

Curling stones are not manufactured in the United States, and it is not likely that quoits are imported, at least in significant amounts. It appears, therefore, that official statistics of imports of these articles represent curling stones only. Imports are received chiefly from the United Kingdom and go mostly to States bordering on the Great Lakes.

TARIFF HISTORY.

Curling stones and quoits have entered the United States free of duty since 1872, having been given special mention for the first time in the tariff act of that year.

COMPETITIVE CONDITIONS AND TARIFF CONSIDERATIONS.

The demand for curling stones in the United States has never been large enough to justify the establishment of a manufacturing industry, and the prospect is that it will never be much, if any, greater than it has been in the past, the use of curling stones being limited to a few winter months of each year and confined to only a few States in the northern part of the country.

Quoits can be made in any of the many iron foundries of the United States at small manufacturing cost. The process is a simple one of casting, no finishing or polishing operations being required. American foundry facilities and raw material are abundantly sufficient to supply all domestic demands. It is not likely that foreign countries can compete successfully in the markets of the United States on quoits.

It is not considered that there is any tariff problem of consequence in the case of either curling stones or quoits.

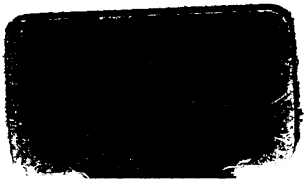
Imports for consumption—Revenue—Curling stones, or quoits, and curling-stone handles.

Fiscal year.	Rate of duty.	Value.	Fiscal year.	Rate of duty.	Value.
1907	Free	$1,849	1915	Free	$1,259
1908	do	1,472	1916	do	2,882
1909	do	2,336	1917	do	2,427
1910	do	1,723	1918	do	380
1911	do	1,781	1919	do	188
1912	do	2,104	1919[1]	do	1,793
1913	do	2,684	1920[1]	do	3,315
1914	do	3,447	1921[2]	do	90

[1] Calendar years. [2] Six months ended June 30, 1921.

Rates of duty—Curling stones, or quoits, and curling-stone handles.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	685	Curling stones, or quoits	Free.
1890	552	Curling stones, or quoits, and curling-stone handles	Do.
1894	462	do	Do.
1897	540	do	Do.
1909	551	do	Do.
1913	470	do	Do.



UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPH 340 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

CORK

Paragraph 340:
Cork Manufactures

Paragraph 464:
Cork Wood, Unmanufactured
Cork Waste, Shavings, and Refuse

REVISED EDITION

WASHINGTON
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UNITED STATES TARIFF COMMISSION.

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for, and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by the use of this "Introduction and index" the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Frank S. Sanford and Joseph M. Donohoe, of the Commission's staff, and of others.

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CORK.

SUMMARY.

Cork bark or wood.—Cork is the bark of an evergreen oak common to southern Europe and northern Africa. The trees grow to a height of 40 or 50 feet, average 12 inches in diameter, and live to a great age. The bark is stripped at intervals of nine years, each tree yielding an average of about 45 pounds. Portugal is the leading producer, growing about one-third of the world's supply. Most of this is exported unmanufactured. The remaining supply comes from Spain, France, Italy, Algeria, Tunis, Morocco, and Korea, that from Korea differing in some respects from true cork. In 1912 the United States Forestry Service planted cork oaks in Florida for experimental purposes, but none is grown in this country for commercial use. Spain is a large manufacturer of cork products, exporting very little unmanufactured bark. An export tax on bark is imposed by both Spain and Portugal.

The principal products of cork are bottle stoppers, or corks; disks or wafers used in the crimped metallic stoppers known as crown corks; cork paper, used chiefly for the tips of cigarettes; seine floats and fillers for life preservers; and insulation board made from cork waste or shavings. Numerous other articles, for which it is particularly adapted because of its qualities of lightness, compressibility, elasticity, and imperviousness to water, are also made.

The domestic industry, although required to import the raw bark, is an important one. In 1914 there were 52 establishments with capital of $7,602,000. Production, which embraced to some extent practically all manufactures of cork except cork paper, amounted to $7,875,000. Importations of bark are chiefly from Portugal and Spain. The more important domestic products are the higher grade corks, cork disks, and insulation board. Hand cutting has been replaced entirely by machinery. A large portion of the machinery is automatic, but in some classes skilled hand work is necessary. An instance of this is in the punching of the high-grade corks, where it is necessary for the operative to so guide the bark that the best portions are punched.

Great skill is required in sorting, both of the bark and of the finished articles. Proper sorting of the bark for the various purposes is very important, profitable, and economic operation depending on this to a very large extent. Even with careful sorting it is not possible to secure a uniform finished article, which necessitates the second sorting after the corks are completed.

Spain is a very strong competitor in the domestic market having, in addition to the native supply of bark, the advantages of an export tax on unmanufactured bark, and skillful labor at less cost than domestic labor. The Spanish industry is also very generally equipped with modern machinery, and the cheaper labor is on a par in production with our own.

Imports of cork bark and waste amounted to $6,338,330 in 1920, the imports of manufactures of cork amounted to $1,969,203, while the value of domestic exports was $2,022,174.

Cork—Summary table.

	Domestic production.	Imports for consumption, free and dutiable.	Domestic exports.	Ratio to production, exports (per cent).	Value, imports, for consumption (manufactures).	Amount of duty.	Equivalent ad valorem rate.
Fiscal year:							
1910		$4,703,899.10	$157,046.00		$1,551,619.10	$317,532.14	20.47
1911		6,676,505.21	168,267.00		2,389,745.21	453,987.36	18.99
1912		5,425,171.00	294,046.00		2,178,085.00	437,991.98	20.11
1913		5,497,219.25	339,436.00		2,345,149.25	425,871.01	18.16
1914	[1] $7,875,000.00	6,480,577.00	462,199.00	5.87	2,628,387.00	507,422.60	19.31
1915		4,324,692.00	211,795.00		1,568,560.00	383,387.84	24.44
1916		4,013,152.00	455,424.00		878,268.00	203,716.60	23.20
1917		6,495,621.00	541,579.00		2,626,804.00	553,407.60	21.07
1918		5,039,349.00	847,377.00		1,977,522.00	455,377.18	23.03
1919		4,623,049.00	[2] 986,821.00		1,060,306.00	177,451.00	16.73
1920		5,841,871.00	[2]1,081,855.00		1,672,348.00	296,401.83	17.72
Calendar year:							
1918		4,199,677.00	986,821.00		1,669,032.00	385,871.00	23.11
1919		5,650,078.00	1,081,855.00		1,289,016.00	210,499.00	16.33
1920		8,307,533.00	2,002,174.00		1,969,203.00	305,495.00	15.51

[1] Products of establishments engaged in the manufacture of various articles from cork, including such products as life preservers and cork board for insulation, cork tips, but comprising chiefly bottle corks. In addition, products to the value of $54,353 were reported by establishments assigned to other industries. (Census of Manufactures, 1914.)

[2] Exports for calendar years 1918 and 1919.

General Information.

1913 TARIFF PARAGRAPH.

340. Cork bark, cut into squares, cubes, or quarters, 4 cents per pound; manufactured cork stoppers, over three-fourths of an inch in diameter, measured at the larger end, and manufactured cork disks, wafers, or washers, over three-sixteenths of an inch in thickness, 12 cents per pound; manufactured cork stoppers, three-fourths of an inch or less in diameter, measured at the larger end, and manufactured cork disks, wafers, or washers, three-sixteenths of an inch or less in thickness, 15 cents per pound; cork, artificial, or cork substitutes manufactured from cork waste, or granulated corks, and not otherwise provided for in this section, 3 cents per pound; cork insulation, wholly or in chief value of granulated cork, in slabs, boards, planks, or molded forms, ¼ cent per pound; cork paper, 35 per centum ad valorem; manufactures wholly or in chief value of cork or of cork bark, or of artificial cork or bark substitutes, granulated or ground cork, not specially provided for in this section, 30 per cent ad valorem.

464. Cork wood, or cork bark, unmanufactured, and cork waste, shavings, and cork refuse of all kinds. Free.

DESCRIPTION AND USES.

Cork, as its name implies, is the cortex or bark of a species of evergreen oak indigenous to southern Europe and northern Africa. The trees attain a height of 20 to 40 feet, live to great age (300 to 400 years), and average approximately 12 inches in diameter. Specimens occasionally are found as much as 12 feet in circumference. The bark is silvery gray and is quite unlike the bark of other oaks in texture. Its thickness and quality vary with the soil and climatic conditions. If the ground is rich and damp the bark is

thick and generally open and poor in quality. The best cork comes from the mountainous districts where the soil is thin and the rainfall not very abundant.

It is stripped from the tree during July and August, at intervals of about nine years. Longitudinal and transverse incisions are made to the proper depth and the bark then pried off in slabs, great care being taken not to injure the tree. Commercial bark varies from one-half inch to 2 inches in thickness, occasionally 2½ inches. It is taken from both the trunk and limbs, the thicker bark coming from the trunk. Also young vigorous trees furnish thicker bark than older ones. The average yield per tree is 45 pounds.

Practically the entire world's production is obtained from Portugal, Spain, France, Italy, Tunis, Algeria, and Morocco, Portugal producing about one-third. From Korea a species of cork is also obtained which possesses some but not all the qualities of that from the Mediterranean countries.

The industrial uses of cork are many, the various articles into which it is manufactured being too numerous to enumerate. Its best known field of utility is in the manufacture of cork stoppers, and cork disks. The latter are used as washers in the crimped metallic stopper known as "crown" corks now almost universally used on containers for mineral waters, ginger ale, beer and other beverages. Other uses for which it is very desirable because of its qualities of lightness, elasticity, compressibility and impermeability to water are floats of nets, life preservers, swimming belts, etc.; smokers mouthpieces and cigarette tips; insulation for refrigerators and pipes; in doors and telephone cells to deaden sound; toys; insoles; polishing wheels and rubber for burnishing glass and gold; displaying cutlery; in balls, toys and games, and many other articles, either made from the cork in its natural state or from the waste or shavings as a composition.

In powdered form cork waste is used in making linoleum and other floor coverings, this use being specially provided for in the tariff (par. 276).

Cork bark, cut into squares, cubes or quarters, is a preliminary step in the cutting of corks, generally those made by handwork. Very small imports of it in this condition are made.

Substitutes.—No altogether satisfactory cork substitute has been found, although the wood of some trees possessing a cellular sponginess, lightness, and elasticity has been substituted in many of its uses. One such, known as cordewood or alligator apple, grows in the West Indies. Rubber is used to a great extent for bottle stoppers, and many patent devices and compositions have been employed, but none are the equal of the cork stopper for general use.

DOMESTIC PRODUCTION.

Raw material.—No cork for industrial purposes is grown in the United States. The culture was attempted here as early as 1858, but was not vigorously prosecuted. It is now being introduced experimentally at Chico, Calif., by the Bureau of Plant Industry, and in Florida, by the United States Forestry Service.

With relation to these experiments, the Bureau of Forestry in a report dated March 29, 1916, states:

The cork oak is adapted to growing in certain portions of this country, notably portions of California, Florida, and the Gulf States. It does not thrive in a climate where the minimum temperature goes below 21° F. and where the maximum exceeds 104° F. The cork oak requires a porous, fairly moist soil and an annual precipitation of at least 20 inches. In western Florida, on the Choctowhatchee division of the Florida national forest, some of the trees grown from seed sown in the spring of 1911 are now 10 feet tall and very thrifty. They are, however, on fairly good soil which was thoroughly plowed and which was formerly used as a garden patch. The very largest of the trees have received some fertilizers. At slightly higher and drier elevations in the sandhills the trees have not prospered, and it seems evident that a moist and somewhat richer soil than this pure sand is necessary for their satisfactory development.

Manufactures.—Lacking a native supply, all the bark used in the domestic cork industry is imported. Domestic manufactures embrace practically all the products of cork, with the possible exception of cork paper. This was formerly produced here, but is now practically all imported. The chief products are cork stoppers (generally known as corks), disks and wafers used in the crown cork, and cork board and insulation from the waste or shavings.

Processes.—Before shipping, the slabs as cut from the trees are dried for a few days and are then steamed or placed in boiling water. This process enables the useless outer coating to be scraped off, increases their bulk and elasticity, and removes the tannic acid. It is next scraped, by which process it loses about 20 per cent in weight, then cut into proper sized pieces for baling, and sorted into numerous grades of quality and thickness. After sorting it is baled, rendered compact under pressure, and each bale marked as to quality.

Bottle corks.—Corks are made both straight and tapered and in a great variety of sizes. The thickness of a piece of bark determines the maximum diameter of the stopper, as the cutting is done across the grain. The baled bark is first re-sorted, an average bale of 180 pounds being sorted into about 4 thicknesses of wood and 4 grades, or a total of 16 kinds of wood. The importance of sorting can not be overemphasized, since the whole problem of successful and economical manufacture centers about it. The wood is steamed in ovens for about 15 minutes to soften it for working, and then sliced into strips by a revolving disk. The width of these strips determines the length of the corks. The slices or strips are then taken to punching machines where the corks are cut out, either by automatic machines or by hand punches. The "punch" is a sharp revolving hollow cylinder of the required diameter. The hand punches are more desirable for high-grade corks, as the workmen can avoid the defects in each piece of cork, whereas the automatic machines punch equal spaces in each strip, regardless of defects. For tapered corks a further step is required—placing the corks in slots which are pressed against a revolving disk at such an angle that one revolution of the cork against the disk gives the proper taper. The corks are then sorted, polished, and bleached.

As will be seen, a great deal of waste is incidental to the making of corks, and this is utilized in various ways for making articles of cork composition or for loose insulation.

Cork disks or wafers.—Cork disks or wafers, used primarily in crown corks, and to a small extent for other purposes, are made both from the natural cork and from cork shavings or waste, the domestic product being chiefly the latter. For composition disks

a good quality of waste is used. It is ground, and carefully cleaned by friction and air blast to remove all dust and defective cork wood, then mixed with a binder of rosin, glycerine, and other materials, compressed in tubes the desired diameter, and baked at low heat, great care being taken not to char the cork. The tube is then cooled and the composition as it is pressed out cut into disks about an eighth of an inch thick by automatic machinery. The disks are then sorted and packed.

The natural cork disks are made in an entirely different manner. Good quality bark is cut into strips about twice the desired diameter of the disks and the rough outer bark ripped off. It is then split into narrow strips of the finished thickness and the disks punched out by machinery.

Cork insulation board.—This also is a product manufactured from the waste incurred in the manufacture of corks and other articles cut from natural bark. The waste is ground or macerated and sifted through screens of different sized meshes. The larger granules are used for insulation board and the smaller, some of which are further ground, used in the production of cork floor tiles, composition cork disks, and in powdered form for linoleum.

The ground cork is compressed in molds and baked at 400° F. for four or five hours. The pure ground cork only may be used, the natural gum or resin serving as a binder, or a foreign binder, such as glue, asphalt, pitch, or cement, may be used. The sheets are removed from the mold, trimmed, and cut into standard sizes, 1 foot by 3 feet, with thicknesses of 2, 3, or 4 inches.

Sorting.—One of the most important as well as expensive single items in the industry is that of sorting, both of the bark and of the finished articles. The bark is very carefully sorted to obtain the better grades for the higher quality corks, but even so, it is not possible to obtain a finished article of uniform quality. Therefore, in order to make a specified number of a particular quality of corks, it is necessary to manufacture a great many of other qualities, which necessitates the careful sorting of the finished products. The same applies to cork paper and other products.

Cork paper.—For cork paper the finest quality of bark is selected, cut into blocks 3 by 6 inches, and the rough front and back faces ripped off. The block is then glued fast to a steel plate and placed in the cutting machine, which cuts the bark into sheets about $\frac{1}{300}$ of an inch thick. The sheets are then carefully stacked, ground to uniform sizes, and very carefully sorted into grades. Practically all cork paper produced is used for cigarette tips, and very little, if any, is now made in this country. The cost to the cigarette manufacture is from 9 to 20 cents per thousand tips.

Organization.—The census of manufactures for 1914 gives the value of cork cutting products as $7,875,000, as compared with $5,940,000 in 1909, and $4,491,000 in 1904. The average number of wage earners was 3,454, of whom 2,051 were male and 1,345 female, a total of 155 being under 16 years of age; 52 establishments were engaged in the industry, with capitalization of $7,602,000 and wages of $1,582,000. New York, New Jersey, and Pennsylvania are the leading States.

Hand cutting has entirely disappeared here, automatic machinery or combined hand and machine work having entirely supplanted it.

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Female help is being largely employed on the automatic machines where great skill is not required. Some of the work, however, requires skilled labor, such as the punching of the higher-grade corks, where male operatives feed the punches by hand in order to utilize the best portions of the bark. Practically all the machinery is of American origin and make, but has been adopted by the cork makers of foreign countries.

Some of the American firms also maintain factories in Spain, importing their products to this country.

EXPORTS.

Exports of domestic manufactures have shown a steady increase except in 1915, when they dropped to $211,765 from $462,199 for 1914. They reached $1,081,537 in 1919, and $2,002,174 for the calendar year 1920. Canada, Mexico, Cuba, and Panama are the chief buyers. Japan and the countries of South America are also important markets. Statistics are not available as to the specific articles which compose these exports.

FOREIGN PRODUCTION.

The area over which cork culture extends is approximately as follows: Portugal, 1,482,000 acres; France and her African possessions, 1,633,331 acres, of which 1,052,556 are in Algeria and 202,622 in Tunis; Spain, 741,300 acres. Italy was formerly a large grower of cork, but the production has greatly decreased through lack of culture and destruction of the cork-oak forests.

Portugal is the leading producer, growing about one-third of the world's supply. Practically all of this is exported unmanufactured.

Spain is second in production, but, unlike Portugal, exports only a small amount of the unmanufactured bark—about 18 per cent of production, as compared with exports of about 70 per cent of her manufactures of cork. She is also a large importer of unmanufactured bark from Algeria, France, Morocco, and Portugal. The industry affords employment to about 30,000 people, and modern machinery is used to a very large extent. A number of factories are maintained in Spain by foreign corporations for the production of articles chiefly for export to their home countries. In 1919 Spain imported 3,813,409 pounds of crude cork and produced 176,000,000 pounds of manufactured products, of which 102,197,609 pounds, valued at $7,514,579, was exported.[1] The chief countries of export are the United States, France, and Argentina. England and France are also large manufacturers of cork products, England being a large exporter of crown corks.

IMPORTS.

Cork bark and waste are imported principally from Portugal, that country furnishing more than half the total. Practically all the remainder comes from France, Spain, and French Africa. Imports from France consist principally of waste. In 1920 the total imports of unmanufactured cork were 223,477,340 pounds, valued at $6,338,330, of which 169,549,364 pounds, with a value of $3,741,730,

[1] Commerce Reports, No. 302, Dec. 24, 1920.

was waste, refuse, or shavings, the remainder being natural cork. Very little cork cut into squares, cubes, or quarters was imported. The value of manufactured imports was $1,969,203. The chief items were disks three-sixteenths inch or less in diameter, $905,429; cork insulation in slabs, boards, or planks, $771, 123: cork paper, $62,560; corks less than three-fourths inch in diameter, $88,509; over three-fourths inch in diameter, $39,504. The largest increase is shown for cork insulation, this total having been reached from a value of only $201 in 1914.

The imports of corks over three-fourths inch in diameter decreased to the above figure from a total of more than $2,000,000 in 1913, the drop being most abrupt in 1914, although the rate of duty was reduced that year. The decrease is primarily due to the vastly increased use of the domestic tapered cork and the crown cork. The straight cork was made in only a few sizes and, therefore, these sizes could be imported in large quantities to meet all demands. With the tapered cork this is different, as it is made in numerous qualities and many different sizes.

The decided decrease in imports of cork disks three-sixteenths of an inch or less in thickness for 1919 and 1920 is due to the increased use of the composition disk and the prohibition on brewing beer. The bottlers of beer were the chief users of the imported disk, preferring the 1-piece disk to that made of composition.

These imports are almost entirely from Spain, with the exception of 1919 when imports from Canada were considerable.

The proportion of imports which are made by American owned factories in Spain is not known.

TARIFF HISTORY.

Under the act of 1883 all manufactures of cork bark were dutiable at 25 per cent ad valorem; the act of 1890 divided the manufactures into bark cut into squares and cubes, dutiable at 10 cents per pound, and manufactured corks, dutiable at 15 cents per pound; by the act of 1894 corks, wholly or partially manufactured, were dutiable at 10 cents per pound, bark cut into squares or cubes not being specially provided for; the act of 1897, however, included bark cut into squares or cubes, making them dutiable at 8 cents per pound, and divided the classification of corks into corks over three-fourths of an inch in diameter at the larger end, 15 cents per pound, and corks three-fourths of an inch or less in diameter at the larger end, 25 cents per pound. These duties remained the same in the act of 1909, and at the present are, cubes, squares, or quarters, 4 cents per pound; corks over three-fourths of an inch in diameter, 12 cents per pound; three-fourths of an inch or under, 15 cents per pound.

Artificial cork or cork substitute manufactured from cork waste or granulated corks was first included in the act of 1897 at 8 cents per pound; it was reduced to 6 cents per pound in 1909, and at present is dutiable at 3 cents per pound.

Manufactures of cork not specially provided for, under the act of 1894 were dutiable at 25 per cent ad valorem; and at the same rate under the act of 1897. In 1909 the designation was broadened to include manufactures of artificial cork or cork substitutes not spe-

cially provided for, and the duty increased to 30 per cent ad valorem. Under the present act the duty is 30 per cent ad valorem.

Unmanufactured cork wood or bark has been free under all acts.

The act of 1913 included several new classifications; cork disks, wafers, or washers three-sixteenths of an inch or less in thickness, 15 cents per pound; three-sixteenths of an inch in thickness 12 cents per pound; cork insulation, one-fourth cent per pound; cork paper, 35 per cent ad valorem.

COMPETITIVE CONDITIONS.

Spain is the country whose competition is most keenly felt. The initial advantage possessed through its native supply of raw material is augmented by the imposition of an export tax on unmanufactured cork bark by both Spain and Portugal.[2] This advantage is intensified when tax and freight costs are considered in connection with the large percentage of waste in cork bark. This is not compensated for by the utilization of cork waste, as the freight rate on cork bark is much higher than that on cork waste.[3] The American manufacturer, therefore, who is engaged only in the cutting of cork is at a disadvantage in disposing of this waste.

In the tariff hearings of 1913 it was stated that the labor costs in Spain were about one-third those here. Later information furnished by the trade indicate that this difference is now greater, as the wages in Spain have not increased equally with domestic increases.[4] Cork cutting having been followed by Spanish families for generations, the Spanish workman is very efficient, some manufacturers stating that the skilled Spanish cutters are superior to the American workmen. Modern machinery is used, and production is as efficient as here at a less cost of labor and material.

The products most affected are cork paper, cork disks, such articles as seine floats, cork for life preservers, and cork insulation board. Practically no cork paper, seine floats, life-preserver cork, etc., are produced in this country because of inability to meet this competition; but composition cork disks made in this country compete with natural cork disks.

Cork, manufactures of[5]*—Production in United States—States—1914.*

[Figures from Federal Census.]

New Jersey	$1,594,000	All other[6]	$301,000
New York	2,258,000		
Pennsylvania	3,722,000	Total	7,875,000

Cork, manufactures of[7]*—Production in United States.*

[Figures from Federal Census.]

1899	$4,392,000	1909	$5,940,000
1904	4,491,000	1914	7,875,000

[2] Customs Tariff of Peninsula and Balearic Islands, 1906.—Tariff Hearings 1913, vol. 5, p. 5196.
[3] Tariff Hearings 1913, vol 5, p. 5262.
[4] Tariff Hearings 1913, vol. 5, p. 5191–5204. also Tariff Com. Arculary Fil.
[5] See footnote (1) summary table, page 8.
[6] Includes Illinois, 3 establishments; Massachusetts, 2; Virginia, 1.
[7] See footnote (1) summary table, page 8.

Cork wood or bark, unmanufactured. (Free)[1]*—Imports by countries.*

[Fiscal years.]

Imported from—	1910	1911	1912	1913	1914	1915
Spain	$913,528	$2,010,216	$1,282,871	$1,250,722	$1,421,894	$898,415
Portugal	1,188,738	1,785,848	1,440,491	1,480,329	1,941,618	1,595,945
French Africa	162,655	176,976	256,385	153,798	266,435	170,917
Italy	36,801	56,757	56,938	115,330	75,227	47,884
France	108,860	145,323	122,414	106,077	138,944	17,000
Germany	20,091	85,941	72,240	10,661	7,479	10,389
All other	721,607	13,749	10,980	35,153	197	22,345
Total	3,152,280	4,274,810	3,242,319	3,152,070	3,851,794	2,762,895

[1] Quantity not available.

Cork wood or bark, unmanufactured. (Free)[1]*—Imports by countries.*

[Fiscal years.]

Imported from—	1916	1917	1918	1918 (calendar year).
Spain	$928,477	$1,058,574	$946,373	$832,199
Portugal	1,906,694	2,404,678	1,754,153	1,462,554
French Africa	199,366	233,062	197,352	164,865
Italy	2,671	6,326	44,727	43,928
France	86,822	101,840	88,518	26,476
All other	10,854	65,909	[2] 30,704	623
Total	3,134,884	3,870,389	3,061,827	2,530,645

[1] Includes waste, refuse, etc., which is stated separately after 1918.
[2] From England, $30,107.

Cork wood or bark, unmanufactured (free), [1] *par. 464—Imports by countries.*

[Calendar years.]

Imported from—	1919		1920	
	Pounds.	Value.	Pounds.	Value.
Spain	4,979,555	$224,038	13,784,431	$517,854
Portugal	21,180,579	1,490,049	33,609,583	1,746,828
French Africa	1,771,136	50,984	7,113,050	196,733
Italy	294,054	34,021	2,256,128	93,459
France	.....	.....	1,624,400	18,795
Germany	.....	.....	1,877,034	.....
England	.....	.....	.....	137,148
All other	61,618	3,414	3,707,412	151,339
Total	28,286,942	1,802,506	63,972,038	2,725,008

[1] Does not include waste, refuse, etc., which is stated separately after 1918.

Cork, waste, refuse, etc. (free), par. 464—Imports by countries.

[Calendar years.]

Imported from—	1919		1920	
	Pounds.	Value.	Pounds.	Value.
France	6,745,875	$96,872	3,681,032	$59,419
Italy	11,220,152	168,298	4,654,965	78,839
Portugal	57,477,704	1,187,487	56,915,839	1,565,558
Spain	43,925,182	863,496	61,792,090	1,480,734
Sweden	954,592	25,600	3,077,913	86,158
Denmark	509,755	9,897	.....	.....
French Africa	10,598,333	202,404	13,704,660	291,491
Canada	210,106	4,502	460,065	7,461
All other	.....	.....	1,539,779	43,662
Total	131,641,699	2,558,556	145,826,343	3,613,322

Cork, manufactures of (dutiable)—Imports by countries.

[Fiscal years.]

Imported from—	1910	1911	1912	1913	1914	1915
Spain	$1,332,392	$2,096,706	$1,972,758	$2,229,266	$2,478,364	$1,932,081
Portugal	51,854	67,055	52,534	47,483	86,984	61,961
France	8,098	20,698	26,758	12,413	13,087	12,977
Germany	200,256	137,429	283,325	54,954	34,338	20,870
England	16,108	9,528	5,297	3,828	32,858	2,219
Scotland	412	520	2,840	2,269	465	116
All other	9,991	3,067	2,903	471	1,742	2,835
Total	1,619,111	2,335,003	2,346,415	2,350,684	2,647,838	2,024,059

Cork, manufactures of (dutiable)[1]—Imports by countries.

[Fiscal years.]

Imported from—	1916	1917	1918
Spain	$847,224	$2,026,785	$1,778,279
Portugal	83,680	105,647	152,099
France	5,679	3,633	7,486
Germany	10	.....	.....
England	2,017	2,988	1,099
Scotland	200	106	.....
All other	2,433	19,288	78,183
Total	941,243	2,158,447	[2] 2,017,146

[1] Stated separately after 1918.

[2] Italy, 72,548.

Cork, manufactures of, disk wafers, washers, etc.[1]—Imports by countries.

[Calendar years.]

Imported from—	July 1 to Dec. 31, 1918.		1919	1920	
	Value.	Pounds.	Value.	Value.	Pounds.
France	$11,304	9,491	$29	.....	.....
Italy	.....	.....	1,685	.....	.....
Portugal	32,328	118,282	313,932	$161,554	353,609
Spain	395,211	434,850	393,065	798,551	1,201,544
Canada	.....	.....	866	.....	.....
Cuba	.....	.....	26,917	.....	.....
Canary Islands	3,110	4,675	.....	.....	.....
All other	.....	.....	.....	3,471	3,002
Total	441,953	567,928	736,494	963,576	1,558,155

[1] Not stated separately prior to July 1, 1918.

Cork, manufactures of, all other (dutiable)—Imports by countries.

[Fiscal years.]

Imported from—	July 1 to Dec. 31, 1918.	1919	1920
France	$4,191	$2,330	$1,324
Italy	.....	219	18
Portugal	13,590	17,905	20,500
Spain	152,726	443,910	676,457
England and Scotland	253	4,488	25,864
Canada	211	172,851	302,502
Japan	719	1,582	2,111
All other	.....	69	791,503
Total	171,690	643,354	1,042,092

Cork wood or cork bark, unmanufactured (free)—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1908	Free	60,664,316	$2,092,732	.....	$0.033	.....
1909	do	78,330,391	2,016,534	.....	.026	.....
1910	do	109,271,575	3,152,280	.....	.029	.....
1911	do	139,602,251	4,286,760	.....	.031	.....
1912	do	118,432,309	3,247,086	.....	.027	.....
1913	do	133,327,529	3,152,070	.....	.024	.....
1914	do	88,282,529	2,646,018	.....	.033	.....
1915	do	24,897,803	1,420,581	.....	.057	.....
1916	do	32,866,700	1,517,366	.....	.046	.....
1917	do	40,273,005	2,125,633	.....	.052	.....
1918	do	30,750,497	1,479,072	.....	.048	.....
1919	do	26,595,971	1,736,102	.....	.065	.....
1920	do	27,376,326	1,456,276	.....	.053	.....
1918 [1]	do	22,560,059	1,297,636	.....	.057	.....
1919 [1]	do	28,286,492	1,802,506	.....	.063	.....
1920 [1]	do	53,927,976	2,596,600	.....	.048	.....
1921 [2]	do	11,011,099	571,964	.....	.052	.....

[1] Calendar year.
[2] Six months ended June 30, 1921.

Cork waste, shavings and cork refuse of all kinds (1913)—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1914	Free	90,487,964	$1,205,776	.....	$0.013	.....
1915	do	96,575,427	1,334,262	.....	.014	.....
1916	do	122,077,924	1,617,518	.....	.013	.....
1917	do	120,677,924	1,743,184	.....	.014	.....
1918	do	95,051,164	1,582,755	.....	.016	.....
1919	do	101,762,928	1,827,541	.....	.0178	.....
1920	do	146,649,475	2,713,247	.....	.0185	.....
1918 [1]	do	72,421,740	1,233,009	.....	.0170	.....
1919 [1]	do	131,641,699	2,558,556	.....	.0194	.....
1920 [1]	do	169,549,364	3,741,730	.....	.0220	.....
1921 [2]	do	40,727,374	769,840	.....	.0189	.....

[1] Calendar year.
[2] Six months ended June 30, 1921.

Artificial cork, cork substitutes manufactured from cork waste or granulated cork and n. o. p. f.—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1908	8 cents per pound.	3,395	$1,638	$271	$0.482	16.58
1910	6 cents per pound.	183	103	10	.563	10.66
1911	....do	1	1		1.000	
1912	....do	77	8	4	.104	57.75
1913	....do	695	151	41	.217	27.63
1914	3 cents per pound.	1,511	470	45	.311	9.64
1915	....do	1,155	320	34	.277	10.83
1918	....do	100	25	3	.250	12.00
1919	....do					
1920	....do					
1921 [1]	....do					

[1] Six months ended June 30, 1921.

Cork bark cut into squares, cubes, or quarters—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1908	8 cents per pound.	208	$194	$16	$0.932	8.57
1909	....do	8	5		.625	
1910	....do	1,649	310	131	.188	42.55
1911	....do	542	136	43	.258	31.88
1913	....do	99	32	7	.323	24.75
1914	....do	1,120	343	89	.306	26.12
1914	4 cents per pound.	1,696	298	67	.177	22.48
1915	....do	6,125	1,112	245	.182	22.03
1917	....do	573	116	22	.202	18.96
1918	....do	5	1		.200	
1919	....do	5,635	2,927	225	.520	7.68
1920	....do	1,353	462	54	.341	11.68
1918 [1]	....do	5	1		.200	
1919 [1]	....do	6,135	3,129	245	.510	7.84
1920 [1]	....do	1,387	403	55	.290	13.77
1921 [2]	....do					

[1] Calendar years.
[2] Six months endied June 30, 1921.

Cork disks, wafers, or washers, three-sixteenths inch or less in thickness (pounds)—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1914	15 cents per pound [1]	2,065,567	$1,675,683	$309,835	$0.811	18.49
1915	....do	1,918,643	1,160,316	287,796	.604	24.80
1916	....do	674,066	464,931	101,109	.689	21.75
1917	....do	2,759,446	1,933,621	413,916	.70	21.41
1918	....do	2,258,233	1,401,694	338,734	.621	24.17
1919	....do	828,821	633,638	124,323	.764	19.62
1920	....do	1,351,488	836,784	202,721	.619	24.22
1918 [2]	....do	2,010,408	1,316,590	301,561	.654	22.90
1919 [2]	....do	766,947	452,331	115,042	.589	25.43
1920 [2]	....do	1,382,697	905,429	207,404	.654	22.91
1921 [3]	....do	322,789	247,150	48,418	.766	19.59

[1] Figures cover period from Oct. 4, 1913, to June 30, 1914, inclusive.
[2] Calendar year.
[3] Six months ended June 30, 1921.

Cork disks, wafers, or washers, three-sixteenths inch or less in thickness, from Cuba (reciprocity treaty, Dec. 27, 1903)—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1917	15 cents per pound; 20 per cent.	1,006	$1,111	$120	$1.00	10.87
1920[1]	....do....	24,106	18,617	2,892	.772	15.53

[1] Calendar year.

Cork disks, wafers, or washers, three-sixteenths inch or less in thickness (for manufacture in bonded warehouse and export)—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1915	Free, Sec. IV, M,[2] act of Oct. 3, 1913.	126	$68	.....	$0.539	.....

Cork disks, wafers, or washers, over three-sixteenths inch in thickness—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1914	12 cents per pound.	19,469	$9,443	$2,336	$0.485	24.74
1915	....do....	7,841	4,996	940	.637	18.83
1916	....do....	21,710	22,657	2,605	1.04	11.50
1917	....do....	53,186	37,721	6,382	.709	16.92
1918	....do....	57,785	44,157	6,934	.764	15.70
1919	....do....	52,832	35.724	6,339	.676	17.74
1920	....do....	2,364	2,124	283	.898	13.32
1918[1]	....do....	71,112	46,495	8,533	.653	18.35
1919[1]	....do....	12,651	8,991	1,518	.710	16.88
1920[1]	....do....	11,764	6,736	1,411	.572	20.96
1921[2]	....do....	12,684	10,620	1,522	.....	.....

[1] Calendar year.
[2] Six months ended June 30, 1921.

Cork disks, wafers, or washers, over three-sixteenths inch in thickness, from Cuba (reciprocity treaty, Dec. 27, 1903)—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1917	12 cents per pound; 20 per cent.	877	$889	$84	$1.01	9.47

Cork disks, wafers, and washers, over three-sixteenths inch in thickness (for manufacture in bonded warehouse and export), duty remitted—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1914	Sec. IV, M, act of Oct. 3, 1913.	126	$70		$0.555	
1915	do	254	160		.629	

Cork insulation wholly or in chief value of granulated cork in slats, boards, planks, or molded forms (act of 1913)—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1914	½ cent a pound	2,692	$201	$6	$0.075	3.34
1916	do	956,979	39,651	2,392	.041	6.03
1917	do	4,038,372	181,698	10,095	.045	5.56
1918	do	3,771,294	181,402	9,428	.048	5.20
1919	do	2,834,807	168,389	7,087	.059	4.208
1920	do	6,710,418	543,494	16,776	.0809	3.08
1918 [1]	do	1,349,570	63,704	3,374	.047	5.30
1919 [1]	do	5,719,668	411,472	14,299	.072	3.47
1920 [1]	do	9,000,101	771,123	22,500	.085	2.92
1921 [2]	do	3,935,163	308,726	9,838	.078	3.18

[1] Calendar year.
[2] Six months ended June 30, 1921.

Cork paper (act of 1913)—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
1914	35 per cent		$95,154	$33,303		
1915	do		111,069	38,874		
1916	do		136,615	47,815		
1917	do		138,214	48,374		
1918	do		107,462	37,611		
1919	do		105,751	37,012		
1920	do		85,349	29,872		
1918 [1]	do		116,665	40,832		
1919 [1]	do		101,569	35,549		
1920 [1]	do		62,560	21,896		
1921 [2]	do		9,531			

[1] Calendar year.
[2] Six months ended June 30, 1921.

Corks, three-fourths inch or less in diameter—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1908	25 cents per pound.	49,483	$29,863	$12,370	$0.603	41.42
1909	do	52,762	31,362	13,190	.594	42.06
1910	do	41,699	29,820	10,424	.715	34.96
1911	do	30,771	23,296	7,692	.757	33.02
1912	do	21,998	17,900	5,499	.814	30.73
1913	do	20,635	15,637	5,158	.758	32.99
1914 [1]	do	4,717	3,831	1,179	.812	30.78

[1] Figures cover period from July 1 to Oct. 3, 1913, inclusive.

Cork stoppers, three-fourths inch and less in diameter at large end—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1914 [1]	15 cents per pound.	82,865	$53,947	$12,429	$0.651	23.04
1915	do	131,269	82,576	19,690	.629	23.85
1916	do	143,889	86,681	21,583	.602	24.90
1917	do	147,394	96,289	22,109	.653	22.96
1918	do	177,292	70,233	26,593	.396	37.86
1919	do	40,662	28,392	6,099	.698	21.48
1920	do	76,952	67,776	11,442	.88	16.88
1918 [2]	do	64,556	20,605	9,683	.319	47
1919 [2]	do	76,397	65,150	11,459	.852	17.59
1920 [2]	do	103,961	88,509	15,594	.851	17.62
1921 [3]	do	47,796	42,079	7,169	.880	17.04

[1] From Oct. 3, 1913; to June 30, 1914, inclusive.
[2] Calendar year.
[3] Six months ended June 30, 1921.

Cork stoppers, three-fourths inch and less in diameter at large end (pounds) duty remitted—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				
1914	Act of Oct. 3, 1913 Sec. IV, M.[1]	71	$53		$0.747	
1915	do	734	930		1.27	

[1] Figures cover period from Oct. 4, 1913 to June 30, 1914, inclusive.

Corks, over three-fourths inch in diameter at large end (pounds)—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1908	15 cents per pound.	2,435,154	$1,814,519	$365,273	$0.745	20.13
1909	do	1,163,580	885,536	174,537	.761	19.71
1910	do	1,709,941	1,344,688	256,491	.786	19.07
1911	do	2,553,357	2,155,098	383,003	.844	17.77
1912	do	2,346,323	1,891,372	351,948	.806	18.61
1913	do	2,490,194	2,171,955	373,529	.872	17.20
1914	do [1]	548,452	477,615	82,267	.871	17.21
1914	12 cents per pound [2]	251,744	192,517	30,209	.765	15.69
1915	15 cents per pound.	194,721	166,705	23,366	.856	14.02
1916	do	125,917	84,065	15,110	.668	17.97
1917	do	290,156	178,872	34,818	.616	19.47
1918	do	189,585	128,145	22,750	.675	17.75
1919	do	78,338	41,265	9,400	.526	22.78
1920	do	62,877	52,613	7,545	.836	14.34
1918 [3]	do	101,021	72,426	12,122	.716	16.74
1919 [3]	do	73,728	59,966	8,847	.813	14.74
1920 [3]	do	67,790	39,430	8,134	.581	20.63
1921 [4]	do	54,585	23,627	8,187	.432	34.65

[1] Figures cover period from July 1, 1913, to Oct. 3, 1913, inclusive.
[2] Figures cover period from Oct. 4, 1913, to June 30, 1914, inclusive.
[3] Calendar years.
[4] Six months ended June 30, 1921.

Over three-fourths inch in diameter at large end.

Corks, over three-fourths inch in diameter at large end (pounds)—Imports for consumption—Revenue.

[Form Cuba—Reciprocity treaty, Dec. 27, 1903.]

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1908	15 cents per pound less 20 per cent	450	$185.00	$54.00	$0.411	29.18
1909	do	1,051	434.00	126.00	.413	29.06
1910	do	710	232.00	85.20	.327	36.72
1911						
1912						
1913						
1914	12 cents per pound less 20 per cent[1]	146	81.00	14.02	.555	17.30
1920	do	176	74.00	16.9 (	.42	22.83
1920	do	176	74.00	16.90	.42	22.88

[1] Figures cover period from Oct. 4, 1913, to June 30, 1914, inclusive.

Corks, over three-fourths inch in diameter (pounds)—Duty remitted—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1908	Sec. 15, act of July 24, 1897	2,028	$938.00		$0.462	
1909	do	595	324.00		.545	
1910	Sec. 23, act of Aug. 5, 1909	557	236.00		.424	
1911	do	614	389.00		.633	
1912	do	693	341.00		.492	
1913	do	455	275.25		.605	

Cork stoppers, over three-fourths inch in diameter at large end (pounds)—Duty remitted—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1914	Sec. 4 M,[1] act of Oct. 3, 1913	378	$193.00		$0.511	
1915	do	163	131.00		.804	

[1] Figures cover period from July 1 to Oct. 3, 1913, inclusive.

Cork stoppers, over three-fourths inch in diameter at large end (pounds)—Duty remitted—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1914	Free sec. 4 M[1]	127	$80.00		$0.63	

[1] Figures cover period from Oct. 4, 1913, to June 30, 1914, inclusive.

Cork, all other manufactures wholly or in chief value of cork or of cork bark, or of artificial cork or bark substitutes, granulated or ground cork, not specially provided for—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1908	25 per cent		$159,229.00	$39,807.00		25.00
1909 [1]	do		184,765.00	46,191.00		25.00
1910 [2]	do		49,619.00	12,404.00		25.00
1910	30 per cent		126,611.00	37,983.30		30.00
1911	do		210,825.00	63,247.56		30.00
1912	do		268,464.00	80,539.20		30.00
1913	do		157,250.00	47,175.00		30.00
1914	do		118,653.00	35,595.00		30.00
1915	do		41,466.00	12,439.00		30.00
1916	do		43,668.00	13,100.00		30.00
1917	do		58,273.00	17,481.00		30.00
1918	do		44,403.00	13,320.00		30.00
1919	do		44,220.00	13,266.00		30.00
1920	do		65,055.00	19,516.00		30.00
1908 [3] [4]	25 per cent less 20 per cent.		123.00	24.00		20.00
1918 [3]	30 per cent		32,546.00	9,764.00		30.00
1919 [3]	do		51,286.00	15,385.00		30.00
1920 [3]	do		94,938.00	28,481.00		30.00
1921 [5]	do		3,442,934.00	1,032,880.00		30.00

[1] July 1 to Aug. 5, 1909.
[2] Aug. 6, 1909, to June 30, 1910.
[3] Calendar year.
[4] From Cuba (reciprocity treaty, Dec. 27, 1903).
[5] Six months ended June 30, 1921.

Cork, manufactures of—Domestic exports.

[Fiscal years.]

Exported to—	1910	1911	1912	1913	1914	1915
Canada	$85,141	$57,643	$172,256	$171,487	$203,832	$99,356
Cuba	23,583	12,155	16,751	14,885	14,401	16,688
Argentina	3,301	38,544	8,767	22,646	37,509	1,554
Uruguay			41,366	13,938	657	4,540
Australia and Tasmania	4,670	11,278	7,337	65,310	83,633	6,173
Philippine Islands	4,178	11,957	6,995	17,168	37,095	9,274
All other	36,173	36,690	40,574	34,002	85,072	74,210
Total	157,046	168,267	294,046	339,436	462,199	211,795

Cork, manufactures of—Domestic exports.

[Fiscal years.]

Exported to—	1916	1917	1918	1918 [1]	1919 [1]	1920 [1]
Spain	$52	$282	$16,000	$16,060	$300	$2,515
England	26,149	24,137	60,887	44,838	38,267	28,289
Canada	187,454	223,079	242,132	264,680	338,247	1,236,970
Mexico	20,861	29,377	44,742	39,071	106,711	80,657
Cuba	46,997	72,184	96,794	198,568	124,639	201,247
Panama	18,499	8,925	126,066	137,632	33,541	24,622
Argentina	24,481	5,738	9,271	7,862	23,144	60,777
Brazil	13,960	43,102	20,791	20,556	24,191	27,271
Chile	3,048	9,950	25,502	21,103	39,456	11,434
Colombia	14,082	20,218	11,443	9,734	30,861	32,160
Uruguay	28,856	742	201	523	647	4,975
Japan	1,658	479	36,773	68,600	39,682	19,586
Australia	6,188	11,789	26,225	17,674	38,430	28,081
Philippine Islands	14,975	5,706	47,426	45,064	32,748	75,011
All other	48,224	85,871	83,124	104,856	210,173	168,579
Total	455,424	541,579	847,377	996,821	1,081,537	2,002,174

[1] Calendar year.

Cork—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883....	422	Corks and cork bark, manufactured	25 per cent ad valorem.
	683	Cork wood, or cork bark, unmanufactured	Free.
1890....	434	Cork bark, cut into squares or cubes; manufactured corks	10 cents per pound; 15 cents per pound.
	548	Cork wood, or cork bark, unmanufactured	Free.
	369	Cork carpets, figured or plain, * * * valued at 25 cents or less per square yard; valued above 25 cents per square yard.	40 per cent ad valorem. 15 per cent per square yard and 30 per cent ad valorem.
1894....	319	Corks, wholly or partially manufactured	10 cents per pound.
	351	Manufactures of * * * cork * * * or of which these substances or either of them is the component material of chief value, not specially provided for * * *.	25 per cent ad valorem.
	457	Cork wood, or cork bark, unmanufactured	Free.
	273	Cork carpets, figured or plain, * * * valued at 25 cents or less per square yard; valued above 25 cents per square yard.	25 per cent ad valorem. 40 per cent ad valorem.
1897....	416	Cork bark, cut into squares or cubes, manufactured corks over ¾ of an inch in diameter measured at larger end, ½ of an inch and less in diameter, measured at larger end; cork, artificial or cork substitutes, manufactured from cork waste and not otherwise provided for.	8 cents per pound. 15 cents per pound. 25 cents per pound. 8 cents per pound.
	536	Cork wood, or cork bark, unmanufactured	Free.
	337	Cork carpets	20 cents per square yard and 20 per cent ad valorem.
	448	Manufactures of cork or of which these substances or either of them is the component material of chief value.	25 per cent ad valorem.
1909....	429	Cork bark, cut into squares, cubes, or quarters	8 cents per pound.
		Manufactured corks, over three-fourths of an inch in diameter, measured at larger end.	15 cents per pound.
		Three-fourths of an inch and less in diameter, measured at larger end.	25 cents per pound.
		Cork, artificial, or cork substitutes, manufactured from cork waste or granulated cork, and not otherwise provided for.	6 cents per pound.
		Manufactures, wholly or in chief value of cork, or of cork bark, or of artificial cork or cork substitutes, granulated or ground cork, not specially provided for.	30 per cent ad valorem.
	547	Cork wood, or cork bark, unmanufactured	Free.
	347	Cork carpets	20 per cent per square yard and 20 per cent ad valorem.
1913....	340	Cork bark, cut into squares, cubes, or quarters	4 cents per pound.
		Manufactured cork stoppers, over three-fourths of an inch in diameter, measured at the larger end, and manufactured cork disks, wafers, or washers over three-sixteenths of an inch in thickness.	12 cents per pound.
		Manufactured cork stoppers, three-fourths of an inch or less in diameter, measured at the larger end, and manufactured cork disks, wafers, or washers, three-sixteenths of an inch or less in thickness.	15 cents per pound.
		Cork, artificial, or cork substitutes, manufactured from cork waste, or granulated corks, and not otherwise provided for.	3 cents per pound.
		Cork insulation, wholly or in chief value of granulated cork, in slabs, boards, planks, or molded forms.	½ cent per pound.
		Cork paper	35 per cent ad valorem.
		Manufactures wholly or in chief value of cork or of cork bark, or of artificial cork or bark substitutes, granulated or ground cork, not specially provided for.	30 per cent ad valorem.
	276	* * * Cork carpet, figured or plain, cork carpet rugs or mats	30 per cent ad valorem.
	464	Cork wood, or cork bark, unmanufactured, and cork waste, shavings, and cork refuse of all kinds.	Free.

COURT AND TREASURY DECISIONS.

[Under tariff act of Oct. 3, 1913.]

Disks less than $\frac{3}{16}$ of an inch in thickness made of granulated cork and a binding material, used for inside lining for bottle caps, cans, and for gaskets, are dutiable as manufactured cork disks at 15 cents per pound under paragraph 340. (In re Frankel Co., G. A. 7707, T. D. 35270, of 1915.)

Cork boards or slabs, manufactured from cork shavings, designed for use as floor tiling, are subject to duty at 30 per cent ad valorem

under the provision in paragraph 340 for "manufactures wholly or in chief value of cork * * * or ground cork, not specially provided for." (In re Knauth, Nachod & Kuhns, G. A. 8240, T. D. 37953, of 1919, overruling G. A. 7921, T. D. 36541.)

So-called cork waste, consisting of disks known as "throw outs" mixed with cork cuttings, broken disks, etc., are admitted free of duty under paragraph 464 and not charged with duty under paragraph 340. (T. D. 36214, 36303, and 36579, of 1916.)

So-called cigarette paper, otherwise known as cork paper, in bobbins, or cork bobbins, consisting of thin sheets or strips of cork backed with tissue paper, varying in width from about ½ of 1 inch to 4½ inches and in lengths of about 300 meters, is dutiable at 35 per cent ad valorem as cork paper under paragraph 340. (T. D. 37196, of 1917.)

MISCELLANEOUS.

A bale of cork weighs 150 to 225 pounds. Baled cork wood runs 250 cubic feet to the short ton; cork waste about 165 cubic feet to the ton; cork boards about 210 cubic feet to the ton.

List No. 2 of restricted imports of May 13, 1918, as reported by the United States War Trade Board.

Cork manufactured and manufactures thereof.—Licenses for cork unmanufactured and manufactures of will be granted only as return cargo from European countries, and then only when shipped from a convenient port and when loaded without undue delay.

Export tax.—Spain: 5 pesetas per 100 kilos ($0.965 on 220 pounds). Portugal: Cork wood, or in sheets, 0.03 milreis per 15 kilos (equals $6\frac{1}{15}$ cents per 100 pounds); manufactured in blocks, 0.100 milreis per 15 kilos (equals 21 cents per 100 pounds).

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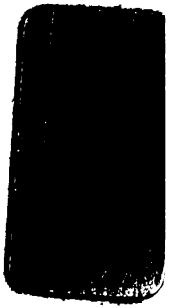

UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPH 337 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

BRISTLES AND BRUSHES

Paragraph 336:
Brushes (For treatment of brooms, see Par. 336)

Paragraph 337:
Bristles, sorted, etc.

Paragraph 432:
Bristles, not sorted, etc.

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UNITED STATES TARIFF COMMISSION.

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this, industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act, reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and Index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and Index," the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Charles F. Yauch, of the Commission's staff, and of others.

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BRISTLES AND BRUSHES.

BRISTLES.

SUMMARY.

Uses.—Bristle is obtained from the backs and sides of hogs and requires several years of growth to become sufficiently strong and stiff. It is the most satisfactory material for the manufacture of paint and toilet brushes and is little used for any other purpose. Inferior grades are in demand as stuffing for mattresses and for upholstery. As the value of bristle for toilet brushes is proportionate to its stiffness, the heavy or follicle end is preferred. For paint brushes the uncut bristle is used because the split end, called the "flag," lifts the paint more readily.

Substitutes.—No material has been found which combines the characteristics of stiffness, durability, and resiliency as does bristle. Horsehair, split quills, tampico, and other fibers are mixed with or used in place of bristle, but with inferior results.

Countries of greatest production.—The best bristle is obtained from hogs which thrive in cold countries. The finest quality comes from northern Russia and Siberia. China ranks first in the quantity of bristle exported, but as the quality is not equal to that of the Russian product, it is second in value. These two countries furnish the larger portion of the world's supply. Small amounts are obtained from India, France, and Rumania. Statistics of production in foreign countries are not available.

Revenue.—The duty on prepared bristles has always been specific. Since 1894 there has been but one change in the rate, a reduction from 7½ cents per pound to 7 cents under the tariff act of 1913. As the annual imports of bristles varied but slightly during this period, the amount of revenue derived yearly was almost constant, averaging about $250,000. The imports showed a marked increase for 1917 and the revenue was over $300,000.

Suggestions of manufacturers as to tariff classification.—Brush manufacturers seek the removal of the duty on bristles or at least a reduction. They justify their position on the following grounds:

1. Foreign manufacturers pay no duty on bristles besides having the advantage of cheap labor. The free importation of bristles would put the American manufacturers on a more equal basis with their competitors.

2. Bristles vary greatly in value. The specific duty ranges from 3 to 45 per cent of the value of the bristle. Cheap bristles are imported in larger quantities than the more expensive.

3. Bristles are not an American product, therefore the removal of the duty would not injure an American industry.

4. Revenue derived from bristle imports is relatively insignificant, therefore the loss to the Government would be slight.

Those interested in the bristle-dressing industry argue that the removal of the duty on bristles would so slightly affect the cost of each brush that there would result no benefit to the consumer or the brush factory employee; but, on the other hand, it would work great hardship on the bristle dresser.

Bristles, sorted, bunched, or prepared—Summary table.

	Imports for consumption.	Value (imports for consumption).	Amount of duty.	Value per unit of quantity.	Equivalent ad valorem rate.
Fiscal years:	*Pounds.*				*Per cent.*
1910	3,915,159.50	$3,127,172	$293,637.02	$0.80	9.41
1911	3,409,878.67	2,879,295	255,741.04	.84	8.88
1912	3,354,350.49	2,926,709	251,575.63	.87	8.60
1913	3,479,666.16	3,319,904	260,975.16	.95	7.86
1914	3,551,081.00	3,255,554	253,753.82	.91	7.79
1915	3,726,625.00	3,348,533	260,863.75	.90	7.79
1916	3,514,309.00	3,456,452	246,001.63	.98	7.12
1917	4,456,284.00	4,678,801	311,939.88	1.05	6.67
1918	3,873,252.00	4,643,042	271,127.00	1.20	5.84
Calendar years:					
1918	3,820,718.00	5,055,898	267,450.00	1.323	5.29
1919	2,971,083.00	5,567,462	207,975.00	1.873	3.74
1920	4,897,868.00	10,097,579	342,850.00	2.06	3.46

Bristles, not sorted, bunched, or prepared—Summary table.

	Imports for consumption.	Value (imports for consumption).
Fiscal years:	*Pounds.*	
1910	17,124	$12,632
1911	11,562	9,803
1912	26,367	14,813
1913	18,913	13,306
1914	27,036	25,280
1915	45,467	3,336
1916	92,300	15,239
1917	128,894	52,431
1918	33,483	44,145
Calendar years:		
1918	91,987	65,061
1919	75,848	102,191
1920	124,136	286,467

General Information.

1913 tariff paragraphs:

"337. Bristles, sorted, bunched, or prepared, 7 cents per pound."

"432. Bristles, crude, not sorted, bunched, or prepared. Free."

Description and uses.—Bristle is the stiff, coarse hair of the swine. The strongest and best grows along the spine and commands a higher price than the softer "side" bristle. The quality is very variable, depending upon the season, the climate, and the breed and maturity of the hog. Even the bristles procured from a single hog at one time will not be uniform in quality. As the use of bristle is practically limited to the manufacture of brushes, it is graded according to its

serviceability for this purpose. Color is often a factor in determining price, but stiffness, resiliency, and length are requisite for success in brush making. The color varies from white to black with intermediate shades of gray and sometimes bronze. White bristle is usually more costly because of the greater demand, but it is not necessarily superior in quality. Stiffness and resiliency make bristle peculiarly valuable for paint brushes, the one insuring durability, the other rapid and accurate response to the touch of the workman. Because of its structure, bristle is better adapted than any other material to paint-brush manufacture. It is heaviest at the follicle end, tapering slightly toward the opposite end, called the "flag" because of tiny splits or divisions. This tapering causes the bristles, when properly inserted in the brush, to cling together and thereby to apply the paint without streaking. The flag ends make the brush more absorbent; it holds the paint on the brush, and it causes an even flow of the liquid to be distributed. For these reasons bristles in paint brushes are uncut and different lengths are used to insure the presence of flag ends when the longer bristles have worn down. Russian bristle has a more decided flag than any other, and because of the heavy body, continues to split with use. Varieties of bristle average different lengths; the Russian ranges from 3½ to 7 inches, the French from 2 to 4⅞ inches, and the Chinese from 2½ to 7 inches. A further characteristic which renders bristle invaluable as a paint-distributing medium is its "life," a quality dependent on its cellular formation containing natural oils which give it an affinity for paint.

Bristle is equally the material of prime importance in the toilet-brush industry, though its efficacy in this line does not depend upon the same characteristics. Stiffness, flexibility, and elasticity are as necessary in the toilet brush as in the paint brush, but the flag end is worthless. Long bristle is desirable because the stiffness increases in proportion to the length. The heavy butt end, however, is the choice part and cheaper grades of brushes are made from the tapering portion between this and the soft end.

When the manufacturers receive the bristle it is in bunches from 2 to 12 inches in diameter, tied around with twine or bark, and sometimes wrapped in paper bearing the brand. These bunches come packed in cases or casks containing an assortment of many grades and lengths.

Kinds.—Commercially, bristle admits of a varied classification. It is listed according to the locality from which it comes, as "Tientsin," "Hankow," "Calcutta." These groupings are subdivided to designate particular characteristics, such as color, length, quality.

Substitutes.—There is no perfect substitute for bristle. Other materials, especially horsehair, tampico, and split quills, are sometimes used in place of bristle, but they cheapen the quality of the brush, lessen its effectiveness and durability. The characteristics which render bristle the most satisfactory material for brushes are not combined in any one substitute.

Hair obtained from the manes and tails of horses and from cows' tails is most frequently used as an adulterant in paint brushes. Some is imported, but much is obtained in this country, chiefly in Texas, and it is considerably cheaper than bristle. A horsehair paint brush is inferior for several reasons: It has no flag ends, so does not lift the paint easily; it does not taper; and it has not the life and elasticity which make the bristle paint brush a perfect tool. The

diameters of the follicle end and the flag end of bristle may vary 0.018 to 0.033 part of an inch, whereas horsehair does not taper over 0.004 part of an inch. A brush containing horsehair has not the durability of a pure bristle brush and, in the paint, will soon become flabby and useless. For certain kinds of brushes horsehair is the most desirable material.

Tampico fiber, a grass imported from Mexico and South America, is a substitute even cheaper than horsehair. In the manufacture of hair and other toilet brushes put on the market at a very low price, tampico is frequently used with bristle. It is coarse and stiff but, lacking the life and resiliency of bristle, it wears out much more rapidly. In fact, it is too coarse and stiff to be a satisfactory medium for applying paint. It has very much the appearance of bristles. A manufacturer declared it is difficult to distinguish without test by fire, consequently it is easily used as an adulterant. Floor sweeps, counter dusters, scrub and other household brushes are satisfactorily made with it.

Among other substitutes for bristle, split quills from feathers, carefully tapered and prepared, have been tried but with little success.

Various kinds of hair, particularly squirrel and sable, are used in the manufacture of artists' brushes for which bristle is not well adapted.

Production.—Climatic conditions are apparently the most potent factor in determining the quality of bristles which hogs produce. The finest quality of bristle, like fine fur, comes from countries lying in the cold belts, where nature provides more sufficient covering for the beasts, and where the beasts themselves thrive in a wild or half-wild state. It is a curious fact that the bristle production of a hog is inversely proportionate to its value as pork. This is the case not only because hogs, slaughtered for the meat, are not allowed to attain sufficient maturity for the bristle to be of much value, but also because with breeding for pork the quality and quantity of bristles tend to diminish. The finest varieties, such as Yorkshire and Hampshire, are practically hairless. "The thinner the hog, the better the bristle" is almost an axiom among bristle dealers.

Countries of greatest production.—The actual production of bristle seems to be almost entirely fortuitous. Nowhere in the world, except to a limited extent in Germany and France, are hogs raised primarily for bristle, or bred to produce greater quantity or better quality. In normal times Russia, by the very fact that her territory embraces the greatest frigid area under one Government, is the main source of the world's supply of extra fine bristle. In prewar times Germany figured as a large exporter, a fact not indicative of great production in that country, for Russian stocks were marketed by German merchants. The remainder of the world's supply, small in proportion to the total outpu of the above-named countries, comes from various localities, among which France, Rumania, and India are ranked as most important.

In so far as figures from different sources are comparable, China exceeds Russia in quantity of production, but as the superior quality of Russian bristle commands a higher price, Russia takes first place in value of exports.

The Chinese bristle trade is almost entirely with Great Britain, France, the United States, and of late years, Japan, as is shown by the table of percentages for the five years 1912 to 1916. The total

trade for this period averaged 7,250,087 pounds annually; this average was considerably exceeded by the exports of 1916 which amounted to 8,371,600 pounds. Although the United States received larger quantities of bristle from China during 1914, 1915, and 1916, there has been little fluctuation in the proportion of trade with this country; the United Kingdom and Japan took the greater part of the increased exports.

The average supply of Indian bristle called "Calcuttas" amounts to somewhat less than half a million pounds annually, which is exported almost entirely to the United Kingdom. It is impossible to estimate the total exports from France, as French statistics include bristles with other brush-makers' wares.

The bristle industry in Russia.—The very finest grades come from Siberia, from the region between the Ural Mountains and the Lena River. The manner in which bristle is collected is characteristic of the necessitated thrift practiced by European and Asiatic peasants. They not only save the bristles from the slaughtered hogs, but gather in the forests those shed by the animals especially during spring. They can not afford to feed the hogs and pork is quite a luxury; hence the bristles grow long and coarse and strong.

As the means of transportation to isolated villages, scattered over the vast plain, are even yet inadequate, the bristle is hoarded by the peasants until the coming of some itinerant purchaser, perhaps a peddler who barters for the goods. From the peddlers it is passed on to the dealers located in the principal centers, such as Petropavlovsk, Omsk, Navonikolaievsk, and Barnaul in Siberia. The preparation of the bristle is not done in Siberia. It is shipped in a raw state to European Russia, where the peasants of the north sort, straighten, turn, drag, and grade it. Establishments for this work have been opened at Nizhni Novgorod, Vyatka, Kharof, and Saratof.

Russian bristle markets.—Often not more than 200 pounds are obtained annually from a village, but from these small beginnings large stocks of raw and prepared bristle are assembled together with other commodities at the fairs, which, because of the difficulties of travel, are so important to the commercial life of Russia. Much of the Siberian bristle is disposed of at Irbit, where a fair is held each year in February. The fair at Nizhni Novgorod, held annually from the last week in July until the middle of September, is the most famous. It is the collecting center for northeastern Russia and Siberia and is attended by bristle buyers from all parts of the world. In 1916 the quantity of bristle brought to the fair amounted to about 180,000 pounds, which was disposed of at varying prices, ranging from 41 to 82 cents a pound for ordinary bristle to as high as $2 a pound for selected grades.[1]

Soon after the beginning of hostilities, Russian bristle dealers, considering Petrograd an advantageous center for the establishment of a permanent market for Russian bristle because of existing lines of communication to the principal countries of destination, made tentative plans in that direction.[2] These plans failed to materialize as they had anticipated,[3] although exports from Petrograd show an increase.

The Commerce Report No. 140, June 16, 1917, quoting from the

[1] Commerce Reports, June 16, 1917.
[2] Commerce Reports, June 15, 1915.
[3] Brooms, brushes, and handles, March, 1918.

Weekly Bulletin, Canadian Department of Trade and Commerce, Ottawa, June 4, has this statement: "While the war put a stop to the German trade in Russian bristle, the demand for bristles from western Europe and America increased, owing to their use in Army boot brushes, etc. The Petrograd export houses at once increased their sales. Thus, in 1913, out of total exports of 5,688,000 pounds of bristles from Russia, Petrograd firms exported 288,000 pounds; in 1914, out of total exports of 3,456,000 pounds, their share was 360,000 pounds; while in 1915 they handled 1,548,000 pounds, out of total exports from Russia of 3,420,000 pounds of bristles."

The direct imports into the United States from European Russia in 1916 were more than five and one-half times the imports for 1913.

The bristle industry in China.—The best Chinese bristle comes from the northern Provinces, Manchuria and Chihli, and from central and western China. The inferior qualities of the south are not salable when the stronger and better-packed bristles from the north can be obtained.

The Canton bristle is sometimes bought up by speculators and put on the market when prices are high. For this reason bristle exports from Canton are variable. Short lengths predominate in assortments of Chinese bristle. As it is usually black and lighter weight, it does not command the price of Russian stocks in the same sizes.

The Chinese bristle industry is described by Vice Consul Crawford M. Bishop, Shanghai, in Commerce Reports, No. 140, June 16, 1915. According to this account the trade, as in Russia, originates in unorganized and sporadic collections by native dealers from the rural population. These stocks are received in a raw state at the larger centers, where they are cleaned, boiled, assorted, and dressed. The preparation of Chungking bristle, for which a certain superiority is claimed, is given in detail as follows: "Chungking bristles are delivered in small bundles, each generally containing the bristles of one pig, and are placed in a 'kong,' or water jar, and kept there in water for one week. The bristles are then washed, cleaned by combing, and spread out in flat baskets and dried in the sun, mostly on the roofs of godowns or houses. The dried bristles are tied on small flat wooden sticks by women and steamed for two or three hours. Then, after removal from the sticks, they are assorted according to length, cleaned again by combing, and bundled.

"To clean 100 piculs (picul = 133⅓ pounds) of bristles 240 men or women are needed. The work of the women consists in tying the bristles on the sticks and in taking them off. Later they receive the finished bundle and pick out all gray or diseased bristles and also the few white ones that may have been overlooked. All other work is done by men, who are paid monthly. The Shanghai and Hankow bristles are cleaned differently and are, therefore, not so straight nor so brilliantly dark in color."

Chinese bristle markets. The principal centers of the bristle trade in China in the order of their importance are Tientsin, Chungking, Hankow, Kowloon, and Shanghai. Tientsin is a northern port in the bristle-producing district and ships annually an average of about 2,500,000 pounds. In the interior Chungking and Hankow, river ports on the Yangtze kiang, are markets for the vast area of central China, handling annually from 1,500,000 to 2,000,000 pounds each. Far less bristle is produced in southern China than in the northern

and central Provinces. Kowloon ships about a half million pounds per annum, and a larger quantity goes through Hongkong, which, not being a Chinese port, is not included in Chinese statistics.

The German bristle market.—In prewar times Leipzig was the world's greatest bristle market. German firms held a monopoly on the bristle output of Poland, western Russia, and even a large proportion of that of Siberia. Enormous bristle stocks of great variety were displayed several times a year at fairs, where American, English, and French dealers effected much of their purchasing. It has been estimated [4] that the average annual distribution of Russian and Siberian bristle at the Leipzig fairs was about 5,400,000 pounds, on which the German dealers more than quadrupled their money. On the purchase price of $2,000,000 they netted a profit of $7,000,000. They enjoyed the advantage of proximity to the source of supply, but their success is attributed to the financial strength of the German importing houses and the cheap bank credit at their command. Bristles procured by American importers through the Leipzig market amounted in value to $982,247 in 1913 and to $679,849 in 1914.[5] The value in 1915 was less than half that of the preceding year. The embargo on exports, the inability of German dealers to secure stocks from Russia, and, to some extent, the shortage of labor have so depressed the bristle market that the fairs have been discontinued.[6]

London, the English bristle market.—London is also an active bristle market. Long the point of distribution for Chinese bristle, the English city, through the cessation of the Leipzig fairs, has become a center for the Russian output as well. No statistics are available concerning the trade in London, but the imports of bristle into the United Kingdom will give a fair idea. The total imports average between five and six million pounds. In 1912 imports amounted to 4,609,047 pounds, of which China supplied 2,215,110 pounds, or 48.06 per cent, and Russia 1,043,149 pounds, or 22.63 per cent. During the first year of the war the Chinese imports were nearly doubled, reaching 4,414,933 pounds, which was 63.86 per cent of the total, whereas the Russian imports, 1,045,579 pounds, were practically the same as in 1912, but represented only 15.12 per cent of the total, which had increased to 6,913,574 pounds. The renewed activity of Petrograd exporters may have been the cause for increased imports of Russian bristle in 1916, amounting to 2,289,621 pounds, and high ocean freight rates were likely responsible for a falling off of over a million pounds in the Chinese imports, which were only 3,347,038 pounds, thus reverting to about the same relative proportions as prior to the war. The United Kingdom takes almost the entire output of India, which in comparison with the imports from China and Russia is inconsequential. Imports of Indian bristle amounted to about 432,320 pounds in 1915–16 and 396,816 pounds in 1916–17.[7] (The fiscal year ends in March.) War needs have greatly increased the demand for brushes, and both New York and Paris look to the London market for much of their supply; hence the London dealers have enjoyed exceptionally active business.

The traditional fairs held on the Continent are not customary in London; instead, the bristle is disposed of at frequent public auctions.

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[4] Commerce Reports, Nov. 15, 1917.
[5] Commerce Reports, Supplement No. 6c, 1915.
[6] Commerce Reports, Supplement No. 6a, 1916.
[7] Annual statement of the sea-borne trade of British India.

The American bristle market.—There is practically no American bristle on the market, as the hogs bred for pork grow rapidly as a result of feeding, and either produce no bristles or bristles that are too soft for brushes. At one time the bristle dressers had employees stationed at the large slaughterhouses to remove the bristles and send them to the bristle-dressing establishments. The work of these men has been superseded by machinery for dehairing the hogs. The result is a diminishing quantity of bristles available for brush manufacture obtained as a by-product of slaughterhouses.

This soft bristle, often called hog hair, is removed from the hog by scraping, and is a valuable commodity for stuffing mattresses and for upholstery. The hair, mixed with particles of thin outer skin detached by scraping, is cleaned, and while damp spun into ropes to curl it. The curled hair gives a more springy filling and is preferable for upholstery.[8]

New York is the bristle market for the United States, but as the imports are entirely for home consumption there is no export trade. There is no bristle exchange, nor are there public auctions. The importers sell directly to the manufacturers. Sometimes representatives of the importers negotiate sales at the factories, but often manufacturers prefer to visit New York, where they can make their choice from the stocks of different importers.

American dealers have done little buying at the sources of supply. They make their purchases through intermediate markets. Results would not justify the expense involved in sending representatives to the countries of origin, and a wider range for selection is possible at the established centers.

Imports.—The imports of bristle into the United States for the last 10 years show little variation, averaging about 3,500,000 pounds yearly. The quantities for 1908 and 1909 fell somewhat below this mark, being 2,441,726 and 2,819,524 pounds, respectively, a decrease which resulted probably from the financial stringency following unstable monetary conditions of 1907. For the first two years of the war the total imports remained normal, though there was considerable change in the sources of supply. The embargo on German trade, the decreased activity of French brush manufacturers, the demands of Great Britain for the total output of her factories, as well as the enormous brush supply required by the United States for construction and equipment in the Army and Navy, gave an unprecedented impetus to the manufacture of brushes in this country. This was reflected in the imports of bristle, which amounted in 1917 to 4,585,178 pounds, an excess of 26.85 per cent over 1916. Although crude bristle is admitted free and the prepared bristle is subject to a duty of 7 cents a pound, usually over 99 per cent of the total imports for consumption is prepared bristle. There are two probable reasons for this: (1) The wastage in buying the crude, unassorted bristle is very great, and (2) the difference in labor costs in foreign countries and the United States more than offsets the duty. In 1916 and 1917 there was a slight increase in the proportion of crude bristle imported. The three most important countries from which American dealers, in normal times, draw their supply are Germany, the United Kingdom, and China. German imports, consisting of

[8] "Brush Making," London, Nov. 20, 1917.

Russian bristle, ranked first in value, but the greatest quantity came from China. The difficulty and final impossibility of trade with Germany forced American buyers into the Chinese market. That country supplied 2,358,772 pounds, or 58.73 per cent, of the total prepared bristle in 1915 and 2,333,437 pounds, or 60.61 per cent, of the total in 1916.

Effects of the war on the bristle industry.—The war has caused considerable disturbance in the bristle industry. It has closed the Leipzig market through the embargo on German exports; it has made the Russian supply uncertain; it has increased ocean freight rates and made shipping exceedingly precarious; and, on the other hand, it has enormously increased the demand for brushes in belligerent countries. The first condition had the result of unsettling the market for awhile, but as Germany was not an important source of supply, a gradual readjustment led to a transfer of activity in the bristle trade to London. Another difficulty has arisen in this regard by the action of the British Government prohibiting exportation of bristles. The chaotic conditions in Russia have proved a serious handicap to bristle dealers and brush manufacturers. The finest grades of bristle come from Russia, and these are practically unobtainable. China has, as a consequence, become the main source of supply, but even in that country political disturbance, floods, and plague have militated against prompt or certain delivery. The sinking of cargoes and the appalling scarcity of available tonnage have made the movement of bristle to manufacturing countries increasingly difficult. The short transportation from China to Japan has enabled the latter country to take advantage of the situation. The phenomenal rise in the quantities of Chinese bristle consumed by Japanese brush manufacturers after the elimination of European competition is indicative of their enterprise. In 1912 and 1913 but little over 2½ per cent of the bristle exported from China went to Japan; in 1914, 8.76 per cent; in 1915, 10.86 per cent; in 1916, 18.33 per cent, which represented 1,533,933 pounds, or almost eight times as much as in 1913.[9] The westward extension of Japan's sphere of influence is regarded as having particular weight in the bristle trade, as it would enable her to dominate not only the Chinese markets but the Siberian output as well.

There has been some increase in the quantities imported by the two greatest manufacturing countries—Great Britain and the United States—but the most marked difference caused by the war has been the shifting of trade from Germany, and, in the case of Great Britain, from Russia to China. In 1916 over 60 per cent of the total imports of bristle into the United States came directly from China. During the same time Chinese bristle comprised over 50 per cent of the total amount received by Great Britain. All these difficulties created by war conditions have led to the inevitable result—high prices.

Even before the war, in 1913, a committee on brushes reported to the convention of the National Paint, Oil, and Varnish Association that, owing to the increase in population, the construction of enormous buildings and ships, and the extension of requirements for brushes, the supply of bristles was not equal to the demand. Under

[9] From figures in Official Chinese Trade Reports.

normal conditions, therefore, the tendency was toward higher prices; the war, affecting the countries of origin, means of transportation, rates of exchange, and various other phases of the trade, enormously accelerated this tendency. The prices on some grades advanced 300 per cent over prewar quotations. The value per unit of quantity of bristles imported into the United States has been comparatively constant, having fluctuated only 25 cents during the 11 years 1907–1917. This apparent discrepancy is accounted for by the fact that later importations comprise a higher percentage of Chinese bristle, which is much cheaper than the Russian.

Bristles, sorted, bunched, or prepared—Imports by countries.

FISCAL YEARS.

Imported from—	1909		1910		1911	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Germany	773,038	$1,030,825	925,616	$1,104,618	766,568	$955,501
United Kingdom	928,672	800,236	1,046,565	917,040	1,001,711	970,917
China	873,744	451,502	1,682,596	817,870	1,460,306	769,811
France	197,909	153,401	258,613	191,919	243,127	193,160
Russia in Europe	69,952	115,656	37,948	51,063	37,273	51,867
All other	41,057	31,862	41,182	29,362	33,928	29,225
Total	2,884,372	2,583,482	3,992,520	3,111,872	3,542,913	2,970,481

Imported from—	1912		1913		1914	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Germany	724,602	$973,858	797,315	$1,151,506	598,847	$809,879
United Kingdom	943,393	968,638	1,050,551	1,169,515	1,013,765	1,166,799
China	1,464,043	855,966	1,407,131	904,065	1,410,373	934,211
France	191,726	147,719	193,839	170,104	175,986	120,911
Russia in Europe	15,894	26,701	32,321	43,542	7,450	9,341
All other	96,143	59,349	78,276	53,248	202,375	129,833
Total	3,435,801	3,032,231	3,559,433	3,491,980	3,408,796	3,170,974

Imported from—	1915		1916		1917	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Germany	360,340	$590,683	41,713	$85,345	2,723	$7,416
United Kingdom	989,050	1,145,018	1,016,587	1,322,984	1,233,195	2,123,612
China	2,358,772	1,612,574	2,333,437	1,598,445	2,373,758	1,718,548
France	137,184	111,055	120,114	106,739	91,706	88,437
Russia in Europe	39,770	69,568	180,413	354,199	124,389	255,255
All other	131,478	80,850	157,823	144,340	200,768	188,143
Total	4,016,594	3,609,748	3,850,087	3,612,052	4,026,539	4,381,411

Imported from—	1918	
	Pounds.	Value.
France	45,047	$65,364
Russia in Europe	120,648	339,905
United Kingdom	433,615	1,124,545
China	2,856,776	2,555,730
Hongkong	162,053	236,576
Japan	282,403	542,818
All other	36,125	29,108
Total	3,936,667	4,894,046

Bristles, sorted, bunched, or prepared—Imports by countries—Continued.

CALENDAR YEARS.

	1918		1919		1920	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
France	16,553	$34,976	77,694	$197,583	.....	.....
Germany	.....	.....	14,510	89,572	.....	.....
Russia in Europe	16,336	60,768	79,279	904,464	.....	.....
United Kingdom	182,404	747,460	557,735	1,467,744	.....	.....
China	3,114,692	3,317,187	2,121,002	2,717,736	.....	.....
Hongkong	357,073	557,910	50,669	117,543	.....	.....
Japan	304,039	745,390	60,691	208,608	.....	.....
Russia in Asia	.....	.....	36,144	47,466	.....	.....
All other	127,973	176,064	83,655	180,863	.....	.....
Total	4,119,070	5,639,755	3,081,379	5,931,579	4,821,083	$10,101,732

Bristles, not sorted, bunched, or prepared—Imports by countries.

FISCAL YEARS.

Imported from—	1909		1910		1911	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Germany	5,117	$3,540	5,813	$4,459	5,610	$4,493
Russia in Europe	4,782	4,000	4,318	3,575	5,759	5,144
United Kingdom	.....	.....	3,946	4,201	73	92
Denmark	200	90	.....	.....	.....	.....
Canada	.....	.....	.....	.....	120	74
All other	30	7	[1] 23,850	752	.....	.....
Total	10,129	7,637	37,927	12,987	11,562	9,803

Imported from—	1912		1913		1914	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Germany	8,895	$5,117	5,209	$3,851	14,287	$15,317
Russia in Europe	4,958	3,897	8,210	6,308	12,578	9,881
United Kingdom	1,104	1,659	600	661	.....	.....
China	7,333	3,790	2,666	1,259	200	100
Canada	.....	.....	2,325	467	184	18
All other	3,884	333	141	37	1,110	179
Total	26,174	14,796	19,151	12,583	28,359	25,495

Imported from—	1915		1916		1917	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Russia in Europe	.....	.....	.....	.....	25,543	$23,146
United Kingdom	1,115	$1,139	2,006	$462	31,252	14,945
China	.....	.....	4,000	826	11,071	9,259
Denmark	10,409	1,045	44,440	2,409	.....	.....
Sweden	.....	.....	7,895	9,096	.....	.....
Canada	33,942	1,152	28,002	2,186	60,203	4,816
All other	.....	.....	31	11	1,391	370
Total	45,466	3,336	86,374	14,990	129,460	52,536

[1] Principally from Austria-Hungary.

Bristles, not sorted, bunched, or prepared—Imports by countries—Continued.

FISCAL YEARS—Continued.

Imported from—	1918	
	Pounds	Value.
Russia in Europe	7,296	$52,300
United Kingdom	4,033	2,176
China	19,300	18,550
All other	2,854	6,105
Total	33,483	79,131

CALENDAR YEARS.

Imported from—	1918		1919		1920	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Russia in Europe	100	$50				
United Kingdom			657	$2,210		
China	9,167	12,392	33,391	23,417		
Japan	100	50	39,723	74,600		
Russia in Asia	14,445	40,000	1,440	1,469		
All other	8,175	12,569	2,528	2,100		
Total	31,987	65,061	77,469	103,796	124,136	$286,476

Bristles, sorted, bunched or prepared—Imports for consumption—Revenue.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:		*Pounds.*				*Per cent.*
1908	7½ cents per pound.	2,433,804	$2,023,548	$182,542	$0.831	9.02
1909	do	2,809,129	2,469,490	210,684	.879	8.53
1910	do	3,915,159	3,127,172	293,637	.799	9.41
1911	do	3,409,878	2,879,295	255,741	.844	8.88
1912	do	3,354,350	2,926,709	251,575	.873	8.60
1913	do	3,479,666	3,319,904	260,975	.954	7.86
1914	do	1,035,620	935,012	77,671	.903	8.31
1914	7 cents per pound.	2,515,461	2,320,542	176,082	.923	7.59
1915	do	3,726,625	3,348,533	260,863	.900	7.79
1916	do	3,514,309	3,456,452	246,001	.983	7.12
1917	do	4,456,284	4,678,801	311,939	1.050	6.67
1918	do	3,873,252	4,643,042	271,127	1.200	5.84
Calendar years:						
1918	do	3,820,718	5,055,898	267,450	1.323	5.29
1919	do	2,971,083	5,567,462	207,975	1.873	3.74
1920	do	4,897,868	10,097,579	342,850	2.062	3.40
1921 [1]	do	1,549,369	2,847,893	108,455	1.838	3.81

[1] 6 months ending June 30, 1921.

Bristles, crude, not sorted, bunched or prepared—Imports for consumption—Revenue.

	Rates of duty.	Quantity.	Value.	Value per unit of quantity.
Fiscal years:		*Pounds.*		
1908	Free	7,831	$8,110	$1.040
1909	do	10,394	7,656	.737
1910	do	17,124	12,632	.738
1911	do	11,562	9,803	.848
1912	do	26,367	14,813	.562
1913	do	18,913	13,306	.704
1914	do	27,036	25,280	.935
1915	do	45,467	3,336	.070
1916	do	92,300	15,239	.170
1917	do	128,894	52,431	.410
1918	do	33,483	44,145	1.320
Calendar years:				
1918	do	31,987	65,061	2.033
1919	do	75,848	102,191	1.345
1920	do	124,136	286,767	2.310
1921 [1]	do	12,603	53,551	4.249

[1] 6 months ending June 30, 1921.

Bristles—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	402	Bristles	15 cents per pound.
1890	426	do	10 cents per pound.
1894	314	* * * bristles, sorted, bunched, or prepared in any manner	7½ cents per pound.
	420	Bristles, crude, not sorted, bunched, or prepared	Free.
1897	411	Bristles, sorted, bunched, or prepared	7½ cents per pound.
	509	Bristles, crude, not sorted, bunched, or prepared	Free.
1909	424	Bristles, sorted, bunched, or prepared	7½ cents per pound.
	523	Bristles, crude, not sorted, bunched, or prepared	Free.
1913	337	Bristles, sorted, bunched, or prepared	7 cents per pound.
	432	Bristles, crude, not sorted, bunched, or prepared	Free.

THE BRUSH INDUSTRY.

"PAR. 336. * * * brushes and feather dusters of all kinds, and hair pencils in quills or otherwise, 35 per centum ad valorem."

TRADE AND COMPETITION.

Competition is keen among domestic manufacturers of brushes, as there is no association to regulate the trade. The industry has profited by the partial elimination, during the war, of European competition and by the large orders for brushes by the Government, the Red Cross, and foreign countries whose trade before the war was supplied by the brush-producing countries of Europe.

Official statistics do not show the quantity, kinds, or grades of brushes imported; the information herein given in regard to the character of foreign competition is therefore largely from statements of manufacturers, importers, and dealers.

Beginning with July 1, 1918, the following classification is followed in official statistics: Toilet brushes comprising tooth, hair, nail, or hand; all other brushes; feather dusters; and hair pencils.

Toilet brushes.—Foreign competition in the past has been almost entirely on toilet brushes. It has been estimated that from 50 to 60 per cent of the toilet brushes used in the United States are imported.

The following statements were made at the conference of the United States Tariff Commission with representatives of the brush industry, held in New York City, March 25–26, 1918.

Before the Ways and Means Committee some years ago the statement was made to me, "There are eleven or twelve million dollars worth of brushes manufactured in this country, and you only import two or three million?" Take the paintbrush industry away and what do you find? You find that we barely make 40 per cent of the toilet brushes used in the country and that the other 60 per cent is supplied from abroad.

The toilet-brush industry battles with labor and conditions in Japan and Europe, which dwarfed its development in this country to such a degree that the industry is practically given over to special lines only, as none of us can make a full line of toilet brushes, whether hair, tooth, or other shapes, against the keen competition that we meet here. (From the statement of Mr. H. Alexander, of the Henry L. Hughes Co., manufacturers.)

In normal times I think over 50 per cent of the toilet brushes used in this country are made in Europe and Asia. (From the statement of Mr. William Cordes, of the Florence Manufacturing Co.)

Importers, on the other hand, claim that they encounter strong competition from domestic manufacturers of toilet brushes.

I wish to differ with some of the testimony already given to the effect that the importers do 60 per cent of the total business of toilet brushes, leaving 40 per cent for the domestic makers.

The tariff on importations of sorted bristles is 7 cents a pound. So much per pound, and for that reason a man can import bristle and put it into a paintbrush or into a hairbrush, where the handle is of little value, much cheaper than he can import the finished article and pay a 35 per cent duty on it, and that is the reason that the domestic paintbrush makers and the hairbrush makers have the largest part of the business. The business left to the importers, as has been stated, is the toothbrush business and the better grade of hairbrushes, hand drawn.

In Japan prices have gone consistently up since the beginning of the war, partly due to the increased cost of labor and partly to the increased cost of raw material, and to a certain extent on account of the buying of other markets, such as South America, London, Australia, and New Zealand, which markets were not chiefly supplied by Japan before the war. We find they are paying prices constantly which are hard to obtain in this market, and at times it has been difficult to obtain supplies in quantities sufficient to meet the demand here for that reason.

We are perhaps a little jealous of the position of American makers. Through advertising done extremely well they have developed trade-marks of value which really place their product beyond price competition. We would like to be in that position ourselves, but unfortunately we are not.

Foreign competition after the war is overestimated. The scarcity of bristles in every brush-producing nation will prevent any accumulation of stock to be dumped here. The countries of Europe are fighting with every man who is able to stand on his feet. They are cut off from their source of supply of raw material; they are disorganized and lack capital to increase their production rapidly. Their prices have been and will be constantly advancing much faster than here. Profits may be cut out a little, but if the production is small it will have but little effect on conditions here for some years after peace is declared. (From the statement of Mr. W. B. Gibson, importer.)

On the cheaper grades of hairbrushes we can not complete. The United States Government, in buying goods for the soldiers, buys domestic hairbrushes, and we can not quote them anything as good at as low a figure. The United States Navy buys military brushes made in this country, and we are unable to quote on those brushes. We can not meet the domestic prices. The only business we can get from the Government is the toothbrush business. The Government requires a low-priced brush, something that sells for about 10 cents apiece. This is all the soldiers can afford to pay for toothbrushes in the cantonments, and that is the only business we can get. (From the statement of Mr. G. S. Gibson, importer.)

The brush business * * * is largely controlled in the United States by the domestic manufacturers, with the exception of the toothbrush industry.

The domestic manufacturers will bring up the argument that they are unable to compete with the French article on account of the price. But in the course of their production they make use of a great many demonstrations. For instance, they will go to a department store and they will put into that department store a demonstrator or a sales person, which costs them so much per week, and that must be taken into account in considering the cost of production of the brush. (From the statement of Mr. Louis d'Angelo, of the Cauvigny Co.)

I believe the main point to be brought out is whether or not the domestic brushes can compete with the foreign-made article. I maintain that they can. My experience has been that when we submit (to Japanese manufacturers) a cement-faced brush, an aluminum-faced brush, a porcelain-faced brush, a two-piece wire-drawn brush, or a solid-backed machine-made brush, we invariably receive a reply that nothing can be done on that class of goods. That takes in bath, hair, nail, hat, and cloth brushes. (From the statement of Mr. O. Zincke, importer.)

The total production of toilet brushes in the United States, according to the Federal Census of 1914, was valued at $3,312,870. The total value of all brushes imported amounted to $2,180,853 for the fiscal year 1914. The last-named amount does not represent the value of the goods laid down, duty paid, in the United States, but the actual market value or wholesale price, at the time of exportation to the United States, in the principal markets of the country whence exported. In comparing production and importation, allowance should be made for consular fees, ocean freights, marine insurance, duties, other charges, and importers' profit.

Toilet brushes, such as tooth, hair, nail, bath, cloth, hat, and shaving brushes, are imported in normal times from France, Japan, Germany, England, and Austria. The French product is noted for its artistic and graceful design and is generally of the solid-back, handmade, trepanned type. The English brush is very different from the French product in appearance. With the exception of tooth and shaving brushes, the English type is a two-piece, hand-drawn brush, the parts of which are fastened together with screws, which add to the general effect of solidity and substantial appearance. The highest grades of brushes imported come from these two countries. They largely supply a class of trade which calls for certain special English or French makes, or which simply prefers the foreign to the domestic article.

The representative of a French company made the following statement:

Aside from making the cheap goods with which we are unable to compete, domestic manufacturers also make a very fine grade of brushes. The S. E. Howard's Sons & Co. has the distinction of making as good a line as any that could be purchased in Europe. The firm of Whiting & Adams, of Boston, make the very best line of hairbrushes, without exception, that can be produced. * * *

The sale of French brushes in this country is not due to their beautiful finish, because they can make just as good a finish here, but it is due to the fact that there is a certain element of people who like to have something French and who are willing to pay the prices. (From the statement of Mr. Louis D'Angelo of the Cauvigny Co., importers.)

An American manufacturer of high-grade brushes gave the following testimony:

In normal times we have difficulty in meeting the competition of Dupont, of France, and Kent, of England; since 1914 we have had but little competition. (From the statement of Mr. W. C. Howard, manufacturer.)

Brushes imported from Germany and Austria are not, as a rule, the equal of those imported from France and England, though Austria has exported to the United States some brushes which rival the French product in style. The cheaper and medium-grade goods are supplied by Germany, where the styles of other countries are copied or imitated. Although Germany and Austria follow largely the hand system of drawing, they also produce machine-made brushes, which are exported to the United States and which come in competition with similar goods in this country. Japan's product is more or less a copy of the designs produced in other countries, and she exports many of the cheaper grades. In the last few years the quality of Japanese brushes has improved, and Japan has overcome to some extent the unfavorable impression that her product is cheap and inferior.

Although toothbrushes are used more extensively in the United States than elsewhere, the domestic production is small. There are not more than three or four factories in this country engaged in the manufacture of toothbrushes, and none of them make toothbrushes exclusively. They do not make a general line of toothbrushes, but produce only those of special device, or under patents, which retail from 35 to 50 cents each. In England and France bone handles are used; in Austria, Germany, and Japan pyroxylin plastics as well as bone are used; in the United States pyroxylin plastics are used almost exclusively. Statistics from Japanese official sources show that

Japan increased her exports of toothbrushes to the United States from 647,235 dozens, valued at $190,713, or 29 cents per dozen, in 1913, the last full year before the war began, to 1,421,863 dozens, valued at $444,736, or 31 cents per dozen, in 1916. The exports for the year 1913, however, were the smallest, both in quantity and value, in the 10-year period 1907–1916. In 1919 Japan exported to the United States 2,777,976 dozens, valued at $1,652,862.

A leading manufacturer made the following statement relative to the toothbrush industry:

I think the United States is more than half the world's market for toothbrushes. When I was in England in 1914 one of the leading advertising agencies told me that if we wanted to introduce the brushes into the Kingdom we would first have to educate the people to use the brushes; less than 10 per cent of the population used toothbrushes. In France it was less. In Germany it was considerably more. (From the statement of Mr. William Cordes, of the Florence Manufacturing Co.)

Next to toothbrushes, hairbrushes are imported in greater quantities than any other kind of toilet brushes. The competition between the domestic and foreign-made hairbrush differs from that in toothbrushes. The cheaper grades of the foreign toothbrush have little or no competition in the domestic market, whereas competition between the foreign and domestic hairbrush is keenest in the cheaper and medium grades. This is due in large measure to the difference between methods of manufacture employed here and abroad. The American hairbrush is mainly machine made; that is, the tufts are set by machinery, or the bristles are sifted through holes in a die and afterwards embedded in a composition. The use of machinery permits a greater output per employee than the hand-drawn method, which is followed in Europe and Japan. The hand-drawn method has, apparently, been attempted in the United States, but it is not in general use because the wages paid in America are higher than in Europe or Japan, where the work is done for the most part in homes by women and children.

The firm of Gerts Lombard & Co., of Chicago, one of our best known and highest grade firms attempted to make what is known as the hand-drawn solid back brush—we call it solid back because it is not split but made of one piece of wood—and they have gone out of that particular industry. It is practically impossible to make those brushes. (Statement of Mr. H. Alexander.)

We can make them, but it is not practicable to do so profitably. (Statement of Mr. William Cordes.)

Domestic manufacturers claim that foreign-made brushes are largely the product of home work, but that claim is denied by representatives of foreign manufacturers.

It is a known fact that the hairbrushes, toothbrushes, and all other toilet brushes imported into this country are largely the product of home labor, and are mostly the work of women and children. Whole villages in France, Hungary, Saxony, and elsewhere are given over to this industry without sanitary regulations of any kind and without restrictions as to the hours of labor. This condition is greatly intensified in Japan, which is sending in more hair, tooth, and nail brushes to the United States than any European country, and which has but four large brush factories that we know of. * * * Toothbrushes in Japan are almost distinctly products of child labor. Contractors and middle men will distribute handles and bristles to women and children at their houses and call there at least once a week to gather in the made-up brushes, paying a very small sum for doing the work. (Statement of Mr. H. Alexander, of the Henry L. Hughes Co., manufacturer.)

There is no home production in connection with our factory (E. Dupont & Co.) in France. I think our factory is pretty nearly as large and as complete as any factory of its kind in the world. The sanitary conditions there I do not think could be improved upon. There is absolutely no work done outside of our factory. * * *

Women and girls, from 16 to 17 years and older, but not children, are engaged in our factory. In fact, they are very strict about their schooling in France. (From the statement of Mr. F. E. O'Callaghan, importer.)

The only work that goes into the home (in France) is that of inserting the bristles into the brushes. The women are unable to leave their homes on account of domestic conditions, etc., and the consequence is the factory takes to them the material and when the work is completed collects it from them. So far as the shaping of the bones is concerned, polishing, washing the bristle and preparing it, all those articles are done in the factories, which are inspected regularly by the authorities to see that everything is perfectly clean and sanitary. (From the statement of Mr. Louis D'Angelo, of the Cauvigny Co., importers.)

Germany and Austria make use of automatic machinery in the production of hairbrushes. At present (1918) there is little competition in the high-grade brushes on account of the restricted importations from France and England. The French ivory hairbrush was much in vogue a few years ago and was instrumental in establishing the popularity of French-made brushes. Japan is now (1918) exporting greater quantities of airbrushes to the United States than ever before. In 1913 Japanese exports of hairbrushes to the United States amounted to 165,476 dozen valued at $292,007, ot $1.76 per dozen, and in 1916 to 261,063 dozen valued at $451,344, or $1.73 per dozen. Japan exported to the United States in 1919, 139,512 dozen of hairbrushes, valued at $347,604. While the quantity exported in 1917 and 1918 was greater than in 1919, the value was less.

The following statement regarding competitive conditions was made by a representative of Japanese manufacturers:

I think it can be said without contradiction that the importers have lost the business in hairbrushes which retail at anything from 50 cents down. We have not been able to get any goods that would compare in service with the goods produced in this country. * * * In the cheaper grade of brushes, on account of competition with the American makers, it is not possible to put in pure stiff bristles and they (Japanese) use the cheap, soft bristles. They must put something else in to give it sufficient stiffness.

You do not find mixed bristles on the American market used by the American makers, and in that lies the difference in value between the American cheap hairbrush and the Japanese cheap brush. In a cheap hairbrush the public wants a good stiff pure bristle, and they do not care anything about the back. It is on that account that we have not been able to increase our business on cheap hairbrushes in this country. Those competitive conditions are recognized in the trade, and for that reason the American cheap brush sells better than the imported cheap brush. (From the statement of Mr. W. B. Gibson, importer.)

What has been said in regard to hairbrushes is also true of nail, bath, cloth, and hat brushes. These brushes can be made by machinery, and it is on the strength of the greater output per employee, as well as factory organization and selling methods, that the domestic producer can compete with the foreign hand-drawn method. Shaving brushes are imported only in small quantities; the competition is among domestic producers.

Paint and varnish brushes.—There is little foreign competition in the heavy lines of paint and varnish brushes. They represent only a small proportion of the total brushes imported. Before the war, Germany was about the only country that exported this class of goods to the United States. Paint and varnish brushes are now (1918) being offered to the American trade by Japanese representatives, but their brushes are said to be cheap and poorly constructed. Japanese workers are not skilled in the art of making paintbrushes, and up to the present time American manufacturers have felt no competition.

The American paintbrush manufacturers have had all they could do right in their own country. We have not gone after the export trade to any great extent for the simple reason that our capacity has been limited owing to the scarcity of labor. We can not depend on any machine to produce our goods; we have to depend upon hand labor all the way through. * * * They (American manufacturers) tried to sell goods in South America, and they found the German product very strongly intrenched. * * * To-day a large percentage of the brushes used in those countres are either German, English, or French goods. * * * Heretofore there have been some few paintbrushes imported from Germany, and it is said that Japan is now trying to catch the American production. I have seen several samples, and they are very crude compared to ours. The German product is mostly a soft-hair brush. Some of the manufacturers make those lines but we do not. We do not meet any competition from abroad. (From the statement of Mr. George Barth, of the Bigelow Brush Co., manufacturers.)

Before the war we had made attempts to export goods, but the German competition was so severe, we never found it possible to do that profitably, and for that reason our line of exports has been very small. Another reason for the small amount of exports is the fact that the models of the German manufacturers were different from the American models, and we never discovered that there was enough profit in the German models to make it pay to copy them. (From the statement of Mr. J. H. Heroy, of Rennous, Kleinle & Co., manufacturers.)

The small imports of paintbrushes may be attributed partly to the difference in style between the American and foreign models, to the established reputation of the American brush, to the fact that the trades for various reasons prefer the American make, and to the nature of the brush itself, which is, perhaps, the chief reason. The materials used in the manufacture of the paintbrush enter largely into its value, and therefore the ad valorem duty is an effective protection.

Artists' brushes and hair pencils.—These brushes are made of soft hairs, and are used by artists, decorators, stripers, and letterers. The volume of production in the United States is small compared with the total production of all brushes. Some manufacturers of paint and varnish brushes handle artist's brushes as dealers, obtaining their stock from manufacturers who make a specialty of this line; others carry a line of imported artist's brushes. No machinery is used in the production of these brushes; they are made entirely by hand labor and much of the work is given out to be done in homes. Although the labor put in the American made article is less than in the foreign, the labor cost is relatively greater.

Some of this work is given out. The putting of the hair into the brush is often done outside, but the finishing of the goods, the extracting of the short hairs which are in every brush, etc., is all done in the factory.

There is a big field for that home work. We have in New York City, I will guarantee, 100,000 women who would like to do this work at home. I have picked up in a few weeks 100 extra hands in that way to make these cheap goods. I can not keep that up because the Japanese competition has spoiled my plans. These women would like to make the goods at home, because their housework only takes about half of their time, and a great many of them have absolutely no pin money whatever. If they can make $5 or $6 a week and only be employed half their time, they are very glad to do it. I think for my industry that is the greatest labor market in the world.

That work could not be done in New York State except through the granting of a license by the authorities. The authorities give licenses to any houses where the landlord allows the house to be investigated. The license is given to any house with three or four tenants; if it has less than three tenants no license is required. We have lots of houses licensed in Mulberry Street, right in the Italian district, where there will be anywhere from 12 to 20 families in a house. The landlords get a permit. (From the statement of Mr. A. Baker, manufacturer.)

Before the war 90 per cent of the importations came from Germany. Since German competition has been eliminated, this branch of the industry has had some prosperous years. The American manufac-

turer is not without foreign competition, however, as the Japanese have entered this field also. It is claimed that their brushes do not point up well and therefore are unsatisfactory. The Japanese have not as yet acquired the technical knowledge to become a serious competitor in the American market.

Before the war there was imported to the United States from Germany a very large quantity of soft hair brushes made of squirrel and similar hair. Few of this class of goods were made in the United States simply because they could be made much cheaper in Germany, owing to much lower labor costs. Since the imports from Germany ceased, some of the American manufacturers of soft hair goods have done a fairly profitable business, of course at a considerably higher price than before, as labor prices naturally were higher than those in Germany. Now you will find that Japanese manufacturers are offering these soft hair goods at prices below the actual cost price of the same goods made by American makers. (From the statement of Mr. William Cordes, of the Florence Manufacturing Co.)

In the last few months a good many of our styles have not been selling at all because Japanese competition has come in. Any large jobber can go to any Japanese importer, of which there are about 25 in this city, and that importer will send my sample to Japan, have it copied and they will produce it for less money than I can produce it myself. * * * I have no reason to believe that the goods are being shipped into this country at less than the cost of production abroad, because generally speaking, the Japanese price to-day is 20 per cent higher than the German price in normal times. I think it is legitimate, but I believe when times are normal the Japanese appetite will be so keen to keep this line of manufacture that she will undersell Germany. I do not think the German product was dumped on this country at an unreasonably low price, but the people in Germany seem to work so unreasonably cheap. (From the statement of Mr. A. Baker, manufacturer.)

American producers of household, shoe, horse, mill or machine brushes, and a great variety of special brushes, have little or no foreign competition. The small imports of these brushes are accounted for by the fact that some of the brushes can be made by machine, a method in which Americans excel, while others are of such peculiar shape and design that the demands of the trade can be more quickly supplied by the American manufacturer than by the importer, who is not apt to carry an extensive line of special brushes.

Imports.—The total value of the general imports of brushes of all kinds for the years 1910 to 1914, inclusive, averaged $2,062,114. In 1915 the imports fell to $1,644,189 and in 1916 to $1,292,801, but rose in 1917 to $2,209,976, the highest amount reached, with the exception of 1911 when the amount was $2,241,066. Since 1917 imports have increased in value, amounting to $3,170,143 in 1918, $2,756,910 in 1919 (calendar year) and $4,584,598 in 1920 (calendar year).

Previous to the war about two-thirds of the imports came from France, Germany, and England. The value of the imports from France and England has decreased more than one-half since 1914. The imports from Germany amounted to only $1,305 in 1917 as against $514,240 in 1914. The decline in imports from Austria-Hungary, although relatively large, has had little effect on the total value imported, as the imports from that country have never been in excess of $40,000.

The increase in the imports from Japan has more than offset the decline in imports from Europe. For the years 1910 to 1914, inclusive, the imports from Japan averaged about 30 per cent of the value of the total imports. In 1915 they amounted to $757,421; in 1916 to $843,020, and in 1917 to $1,800,300. During these three years they formed 46, 65, and 81 per cent, respectively, of the total

imports of brushes from all countries. For the calendar year 1919 imports from Japan amounted to $2,524,550, or 91.57 per cent of the total general imports.

Exports.—Comparatively few brushes are exported from the United States. In 1914 the total domestic exports amounted to $449,909, or less than 3 per cent of the total production for that year. Exports increased to $604,916 in 1915, and to $1,132,262 in 1916, but dropped in 1917 to $863,630. The increase in 1916 was due to the large purchases made for the British Government. The exports to England were: $27,213 in 1914, $301,865 in 1915, $621,104 in 1916, and $70,038 in 1917. The decline in the value of brushes exported to England in 1917 was due directly to restrictions placed on shipments by the British Government. Exports for the calendar year 1919 amounted to $1,470,555, and for 1920 to $2,085,821.

In 1915 and 1916 our export trade in brushes with England was greater than with any other country; with this exception Canada has been the chief country to which the United States has exported brushes. In prewar times Canada took between 40 and 50 per cent of our exports; since 1914 her share has varied from 13 to 29 per cent, the variation being due partly to a decrease, in some years, in value of the exports to Canada and partly to relatively larger increases to other countries.

Exports to other specified countries for the years 1914 and 1917, respectively, were as follows: Cuba, $31,717 and $81,252; Mexico, $17,640 and $56,849; Argentina, $10,561 and $39,994; Australia, $34,572 and $47,307; Brazil, $2,440 and $29,666. The increase in the export trade is traceable to the war. Those countries which depended upon Germany, England, and France have now turned to the United States for their supply of brushes. Domestic manufacturers have not, as a rule, sought an export trade either before or since the war began. They look upon the increase as temporary and believe that Germany, England, and France in order to regain their former trade, will sell brushes at prices so low that the American manufacturers will not be able to compete. Exports in 1919 to the specified countries above have continued to increase in value.

The kinds of brushes exported are not shown in official statistics but from other sources it is learned that our exports, especially those to Canada, are mainly paint and varnish brushes. Some of the large paint and varnish houses handle brushes as a side line in connection with their regular export and domestic trade. Toilet brushes are also exported, but they are usually brushes with established trademarks.

Duties collected.—The revenue derived from the importation of brushes averaged $625,000 for the fiscal years 1907 to 1909, inclusive; $804,000 for the years 1910 to 1913, inclusive; and $650,000 for the years 1914 to 1917, inclusive. The average for the last period was greatly affected by the war, which caused a large decrease in the value of the imports for the fiscal years 1915 and 1916, before the imports from Japan had offset the decrease from Europe. The first period was for the last three years under the Dingley tariff, the second period for four years under the Payne tariff, and the third period for four years under the Underwood tariff.

THE MANUFACTURE OF BRUSHES IN THE UNITED STATES.

The manufacture of brushes in New England began in the vicinity of Boston, and that locality has remained an important center of the industry in the United States. The historian of the town of Medfield, Mass., records: "In 1808 the manufacture of brushes commenced here and was a new industry in this section of the country." The brushes made in Medfield were an improvement over the English brushes and superseded them entirely during the War of 1812. The superiority of the American brushes was not, however, entirely responsible for the disappearance of the foreign product, as the war itself stopped all trade between the United States and England and gave American producers an opportunity to establish their goods in the American market. Brushes were also manufactured in Lansingburg, now part of Troy, N. Y., as early as 1810, and the industry continues to be an important one in that city.

SUMMARY OF THE INDUSTRY IN THE UNITED STATES.

The latest official statistics of the production of brushes are contained in the Census of Manufactures, 1914. In that year the industry was carried on in 359 establishments with capital amounting to $14,332,768. These establishments gave employment to 7,213 wage earners on the average during the year. The cost of materials was $9,326,655 and the value of the products $17,894,476. Massachusetts, with a product valued at $3,910,000, was first in production, but was closely followed by New York with $3,835,000. Other States with a product in excess of $1,000,000 were Maryland, New Jersey, Ohio, Illinois, and Pennsylvania.

Data for the industry as a whole and for the different branches, as defined by the Bureau of the Census, are shown in the following condensed table:

Items.	Total.	Toilet.	Paint and varnish.	All other.
Number of establishments	359	41	45	273
Wage earners (average number)	7,213	1,208	2,420	3,585
Capital (thousands)	$14,333	$2,329	$3,483	$5,521
Wages (thousands)	$3,461	$560	$1,262	$1,639
Cost of material (thousands)	$9,327	$1,109	$4,208	$4,010
Value of product (thousands)	$17,894	[1] $2,675	[2] $7,303	[3] $7,916
Value added by manufacture (thousands)	$8,567	$1,566	$3,095	$3,906

[1] Toilet brushes to the value of $545,501 were made by paint and varnish and other brush manufacturers, and to the value of $92,369 by manufacturers in other industries.

[2] Paint and varnish brushes to the value of $42,500 were reported by the "toilet" and "all other" groups, and to the value of $309,169 by establishments assigned to other classifications, principally "paints."

[3] "All other" brushes to the value of $260,884 were made by toilet and paint brush manufacturers, and to the value of $685,399 by establishments in other classifications, principally "upholstering materials, not elsewhere specified," and brooms.

DISTURBANCES DUE TO THE WAR.

The domestic production of brushes has been greatly stimulated by the partial elimination of European competition, increased purchases by the United States Government for the use of the Army and Navy, larger orders from foreign countries whose trade was

formerly supplied by Europe, and increased activities in other industries.

In the first year of the war the British Government and the French Government had commissioners in this country trying to buy brushes from the manufacturers to help them in equipping their armies. That condition might account for some increase in 1916. Since then they have taken care of the situation themselves and are supplying their market. * * *

The war has had the effect of increasing our production. I think, in our particular case, it is due to the fact that there are no goods coming from foreign countries. We do not expect to hold the business we are doing now after the war is over, by any means. (From the statement of Mr. William Cordes, of the Florence Manufacturing Co.)

The demand in this country has been very heavy because of our entry into the war. We have had very large requisitions from the Navy and the Army in all the different departments, so that we have had difficulty in getting enough material to supply the needs of our own Government. (From the statement of Mr. J. H. Heroy, of Rennous, Kleinle & Co.)

The value of the general imports of brushes from European countries fell from about $1,500,000 in 1914 to about $400,000 in 1917, a decrease of approximately 70 per cent. Domestic exports were valued at $863,630 in 1917, as compared with $449,909 in 1914, an increase of 91.9 per cent. Brush machinery that was idle prior to the war is now (May, 1918) in operation, and manufacturers are installing new equipment and increasing the number of employees, as far as possible, to meet the demands of the domestic and foreign trade. The decrease in imports from Europe was more than offset by the increase in imports from Japan—an advance from $665,952 in 1914 to $1,800,300 in 1917, or an increase of 170 per cent.

The most serious disturbance in the brush industry, created by the war, is the shortage of bristles. Conditions in Russia and the uncertainty of shipments have caused a scarcity of Russian bristles and an advance in price since 1914 of 100 to 300 per cent. Some grades can not be obtained at any price; French and German bleached bristles are no longer on the market. The Chinese supply has been heavily drawn upon because of the scarcity of the Russian stock. Manufacturers are also resorting to bristles from India, commonly called Calcuttas. These have also advanced in price, but not to the same extent as the Russian bristles.

The war has made it very difficult to obtain bristles. There are two reasons for that. One is the fact that a great deal of our bristles came from Russia, and the system of transportation from Russia had been very much interfered with; Russia's commercial life has been altogether interrupted, and at the present time we know of no bristle coming out of Russia. The only bristle to be had is the bristle that has already come out of the country. The other source of supply is China, and that supply has been drawn on very heavily because of the scarcity of the Russian stock. The difficulty in the case of the Chinese bristle is the difficulty in getting bottoms in which to bring the material over. (From the statement of Mr. J. H. Heroy, of Rennous, Kleinle & Co., manufacturers.)

Russian bristle is very scarce at this time, and of course the price is very much increased. Bristle is bought according to length, and the price is fixed on each length according to the demand. On some black goods to-day you can buy 3¾-inch bristle, for instance, just 5 cents a pound cheaper than you can buy the 4-inch. That is, perhaps, on account of the scarcity of 4-inch. It depends on how stocks are in this country. Since the beginning of the war prices have advanced on the Chinese goods 75 per cent, I should say offhand. On the Russian goods they have more than doubled; they have trebled in some cases. (From the statement of Mr. G. Barth, of the Bigelow Brush Co., manufacturers.)

Celluloid has advanced in price on the average 85 per cent, horsehair 50 per cent, brass wire 140 per cent, iron wire 50 per cent, and other materials in varying proportions since 1914. At times manu-

facturers have had difficulty in obtaining materials on account of freight conditions and the inability of producers of brush materials to supply the demands of the trade.

Wages have increased on the average 25 per cent since 1914. Although there has been no general increase in wages by collective bargaining on the part of employees, manufacturers have increased the wages of individuals and of groups of wage earners, in order to retain their present force as well as to induce labor to seek employment in their factories. The scarcity of labor is attributed to the draft and to the high wages paid by manufacturers engaged in the production of war supplies. Under this handicap, manufacturers have not been able to increase their output to the extent that the present demand for brushes would justify.

RAW MATERIALS AND THEIR ORIGIN.

Bristles.—Bristles obtained from the hog are the principal raw material used in brush manufacture. A feature of the bristle which especially adapts it to the manufacture of paint brushes is the "flag" or split end. This tiny split or division into several parts of the outer end makes it a perfect paint and varnish smoother and distributor. The flag end has no value to makers of toilet brushes. Another peculiar feature of bristles is the "bend" or natural curve, which must be taken into consideration in making paint, varnish, and other brushes of like character. The best grades of bristles, determined by length, color, stiffness, shape, texture, and resiliency, are obtained from hogs living in cold climates; hence Russian and Siberian bristles are known for their superior quality. Russia and China supply most of the bristles used in the brush industry. Russia is first in production, followed in the order named by China, Germany, and India. France produces a limited quantity of fine white bristles. The French have the best process of bleaching bristles; "French bleached" stands for the highest grade of whiteness. Other countries of central Europe produce and export considerable quantities of bristles. Those produced in the United States are a by-product of the slaughterhouses. They are short and inferior in quality on account of the breeding of the hog and its immaturity when slaughtered. American bristles are used principally in the manufacture of the cheaper grades of brushes, such as shoe and dust brushes.

The introduction of Chinese bristles into the American market was an important event in the brush industry. The objections of the trade to the substitution of Chinese for Russian bristles were largely overcome by the discovery of the proper treatment of the Chinese bristle. The chief obstacle to the use of the last named was the fact that its peculiar characteristics necessitated a method of treatment different from that used in preparing the Russian bristle. Chinese bristles are generally black and range in length from 2½ to 7 inches. They are as resilient as the Russian but are not so tough or so durable. Their hard-polished surfaces are undesirable in brushes.

Bristle markets.—The chief center of Russian bristles before the war was Leipzig, Germany. The German bristle houses sent their agents throughout Russia and Siberia, chiefly to Nizhni Novgorod, where fairs were held and to which place came the caravans carrying,

among other articles to be sold, the bristles procured from the Russian farmers. The raw bristles were dispatched in bulk to Leipzig, where they were sorted, roughly cleaned, bundled, and prepared for further distribution. The chief centers of distribution of Chinese bristles are Tientsin, Shanghai, Hongkong, and Hankow. Before the revolution in Russia bristle dealers were endeavoring to divert the course of trade from Leipzig to some center in Russia, so that after the war Russian firms might secure the profits which would otherwise go to German middlemen. London at present (1918) controls the bristle trade. The Japanese are endeavoring to secure control of the Russian bristle market, and are said to have copied the effective German system of the past. The main source of supply of Siberian bristles is in the district bordered by the Urals on the west and the river Lena on the east. The question now arises as to whether, should the Japanese extend their sphere of influence westward, the market in the future would not be centered in Kobe. The control of the Chinese bristle trade is also being sought by the Japanese, but has thus far been prevented by the strength of British merchants in China.

Japan is getting a pretty strong hold on the bristle market and is endeavoring to control it. We have bought bristles within the last year from Japan, through a Japanese representative, which we never thought of doing heretofore. It is the first time in the history of our business, extending over a period of 50 years, that we have bought bristles direct through Japanese representatives. (From the statement of Mr. William Cordes, of the Florence Manufacturing Co.)

Substitutes for bristles.—No satisfactory substitute for bristles has yet been found. In the cheaper paintbrushes, horsehair and a fiber known as tampico are mixed with bristles, but they merely serve to increase the size of the brush at the expense of its quality. Their presence in some brushes is not easily detected except by those familiar with the industry. In hairbrushes and in some other toilet brushes split quills are also used to cheapen the quality.

Hairs.—Some brushes are made entirely of hair. Horsehair is flabby, lacks the toughness, strength, spring, and wearing quality of bristles, and, what is very important to paintbrush manufacturers, the absorbing or paint-holding power of bristles. Horsehair is imported from England, Argentina, Italy, Russia, Brazil, Germany, and Uruguay. The domestic supply is from Texas. Red sable hair, a product of Siberia, is the most valuable hair put into brushes. It possesses fineness, toughness, elasticity, soft ends, and great durability. Brushes made of red sable hair are used by artists in miniature painting and in other fine work. Black sable hair serves for brushes used by sign writers and decorators, for lettering, striping, and scrollwork. Squirrel hair, designated camel hair, is fine and has soft ends; it is used largely in the manufacture of brushes for water-color painting. The real camel's hair is a Manchurian product. Skunk hair, dignified by the name of fitch hair, is used in large quantities for varnish brushes. It possesses elasticity and toughness, but lacks softness in the ends. Ox hair and bear hair are also largely used in making varnish brushes. Badger hair, which is long, tough, and coarse, is frequently used for shaving brushes. Hair of other animals is also used in brush manufacture.

Vegetable fibers.—Vegetable fibers, obtained from palms growing in tropical countries, are largely superseding bristles in the manufacture hai[illegible] the coarser kinds of brushes. Tampico, the principal fiber used othe[illegible]

in brush making, is imported from Mexico and to some extent from South America. It is very coarse and is much cheaper than bristles or horsehair, but it does not possess the wearing qualities of either hair or bristles. It is entirely too coarse for paintbrushes, but is adapted to cheap floor sweeps, counter dusters, and other brushes for cleaning purposes.

Tampico is not easily distinguished from bristle and some bristle dressers have not hesitated to insert a first-class quality of the fiber in their packages of bristle. (From the statement of Mr. W. C. Howard, manufacturer.)

Bone.—Bone, used for backs or handles of toothbrushes, is one of the by-products of the large meat-packing houses in North and South America. The better grade toothbrushes are made from selected thigh bones of cattle. Buttock and shin bones are used for the cheaper grades. Bone handles, shaped, polished, drilled, and ready to have the bristles inserted are being offered in the American market by Japanese manufacturers at a price less than cost to American producers, notwithstanding the fact that the bone is shipped from Chicago to Japan and thence back to the United States, the Japanese paying the same price, f. o. b. Chicago. It is represented that a large proportion of the toothbrushes used in the United States have solid back, bone handles. These brushes are largely imported from France and Japan. The bone brushes produced in the United States are wire drawn, with channels on the back filled with wax. Machinery has not been employed effectively in the United States in the manufacture of toothbrushes with bone handles.

Under normal conditions we have been able to buy the handle of the brush we make—when we made it of bone—in Japan at 27 per cent less than we could make it in our own factory, and the raw material, the bone from which the handle of the brush was produced, was shipped from this country to Japan. It is entirely a question of labor, because they can not buy bone any cheaper than we can buy it. * * * We are making toothbrushes by machinery, and we can do it as long as we can use pyroxylin. We can not make them by machinery with bone. The Germans claim that they have been successful in making them with bone, and we have a sample of a bone brush made on a machine. (From the statement of Mr. W. Cordes, of the Florence Manufacturing Co.)

Pyroxylin plastics.—These plastics are variously known by the trade names of celluloid, pyralin, fiberloid, and viscoloid. They consist of pyroxylin—a variety of nitrocellulose—and camphor, with or without a pigment, which is usually zinc oxide. The addition of the pigment gives the opaque product; and desired color may be produced by the addition of suitable dyes. The resemblance of some of these plastics to ivory, in texture and color, has made them very popular materials for the backs of toilet brushes, especially those in sets. Toothbrush handles of plastics are rapidly replacing those made of bone. They are not so porous as bone and for that reason are more sanitary; they will not split and lacerate the gums; they can be used more successfully than bone in making brushes by machinery, as bone splits in the process of drilling; also the metal staple or anchor used to fasten the tuft in the handle or back can be more firmly embedded when plastics are used. Possible rival commodities of the pyroxylin plastics are those of the synthetic phenolic resin type, variously known by the trade names of bakelite, condensite, and redmanol.

Wood.—Wood used in the backs or handles is generally of the hardwood variety imported from tropical countries. Birch, beech, maple, and cherry from New York and the New England States, and

redwood from California are also used. Some manufacturers buy the wooden handles or backs ready-made; others cut them from the log or lumber in their own factories.

Adhesives.—In the manufacture of simple brushes and in some compound brushes, adhesives are used to secure the bristles. Brushes are set in a composition of shellac, pitch, and other gums, in cement, and in glue, the adhesive depending upon the ordinary use for which the brush is intended. A departure from these setting mediums was the use of vulcanized rubber. Hard rubber is insoluble in almost anything in which bristles can be used, whereas other adhesives are more or less susceptible to the action of various liquids.

Miscellaneous materials.—The materials used for binding the bristles to the back or handle are twine, wire, leather, and ferrules of iron, steel, tin, and brass. Other materials which become part of the finished brush are tacks, screws, nails, paint, and varnish.

METHODS AND PROCESSES OF MANUFACTURE.

In the United States brush making started as a household or neighborhood industry. The custom of putting out work to be done in the homes of employees is decreasing, and is confined principally to the drawing of bristles into the backs or handles by hand. The State laws of New York require that tenement houses in which goods are made shall be licensed, and that goods made in homes shall be so marked. Laws regulating the hours of labor, employment of minors, sanitation, and minimum wages have improved the working conditions of the industry. Power machines and other labor-saving devices are now replacing hand labor. This evolution has been slower in the brush-making industry than in most others, notably the textile. There are, however, operations which do not readily lend themselves to the use of automatic machinery. The use of automatic machinery is confined to bristle combing and mixing, to nailing in the manufacture of simple brushes, and to boring and tuft setting by means of staples or anchors in the manufacture of compound brushes.

In the production and manufacture of paintbrushes skilled labor is absolutely required. We have no machines to put the brushes together. The only machines used in our manufacture are what we call the bristle mixing machines and the nailing machine. Aside from those things everything else is done by hand. Some people may be under the impression that it does not require any skill to make a paintbrush. We would not attempt to put a man on certain brushes unless he had had at least three or four years' experience at the bench, for the reason that if the bristles was not turned in, in what we call the flag ends were not turned in, in the proper shape, so that when it is put into the material it will work and wear like a chisel, instead of spreading out like a painter's duster, the brush would not be any good. (From the statement of Mr. C. Barr, of the Bigelow Brush Co., manufacturers.

The article is entirely too delicate for machine production. One of these little tufts of hair is so delicate that the average person would not know that they had it in their fingers. He could not control it and could not work it into shape. To learn how to make brushes properly a person should start in his youth. The hair is produced from the tails of various animals—squirrels, marten, mink, etc. It is only after a person has got used to feeling the hair with the fingers, knowing how much he has and how much it varies in length, etc., that he can make a good brush. (From the statement of Mr. A. Baker, manufacturer.)

Brushes are simple when they have a single tuft of bristles or hair, as paint, varnish, and shaving brushes, and compound when they have a multiplicity of bristles or fiber tufts, as hair, tooth, nail, hat, cloth, shoe, and scrub brushes.

Brushes may also be divided according to their use into three classes: (1) Brushes for toilet purposes, as hair, tooth, nail, bath, and shaving; (2) brushes for painters and artists; (3) brushes for cleaning and polishing, as shoe, scrub, stove, and the great variety of special brushes which come under this class.

SIMPLE BRUSHES—PAINT AND VARNISH.

Preparation of bristles.—Although bristles are generally bought graded as to length and roughly cleaned, they are put through a number of processes before they can be used in brushes. They are further graded as to length by a process called dragging, are washed, dried in a kiln, wrapped around wooden plugs to straighten the bend, and in case of light stock are bleached. These operations are performed by hand. The bristles are then combed and mixed for stock, generally by machinery; the mixture depends upon the grade and kind of brush to be made. The tangles are removed by combing, and all the flag ends are placed one way. The cost of production is reduced by mixing bristles of different quality and varied lengths. The mixing of different lengths is a real advantage, because it permits new flag ends to be brought into use as the longer bristles wear out, and because it prevents the brush from wearing stubby.

Brush making.—This operation may be said to be first in the manufacture of paint and varnish brushes. The stock that goes into each brush is weighed by the brush maker on a hand scale. The required amount of stock is then taken up to be made into a brush. It is here that the skill of the brush maker comes into play. Notwithstanding previous treatment of bristles to remove the bend, they still retain this feature. The brush maker, by a few movements of the hands, so arranges the bristles that the natural bend is inward, toward the center of the brush. If the bend is not properly arranged, the bristles will spread and the brush will prove unsatisfactory to the user.

Metal-bound flat brushes.—The brush maker, after arranging the bristles, inserts them in a metal band, which protrudes some distance above the butt ends of the bristles. If the brush is not made solid, wooden plugs or strips are inserted as a filler and to secure the bristles more firmly in the metal band.

Metal-bound round and oval brushes.—The brush maker, in addition to arranging the bristles and inserting them in a ferrule, pushes the handle backward through the center of the tuft, small end first, and then drives it into place by the hard blows of a hammer.

Chisel-pointed brushes.—The flag end of the tuft is put into a cup, wedge-shaped at the bottom, as large as the brush to be made. By tapping and gentle pressure the tuft settles down into the cup, from which it is removed in the desired shape, and is placed in the binder.

Leather-bound brushes.—The bristles are distributed around the handle or block. The brush maker, by his sense of touch, always keeps the bend of the bristle inward and toward the center. In place of a metal ferrule as a binder, a strap of leather is drawn tightly around and nailed to the handle by hand.

Brushes set in vulcanized rubber.—The operations are somewhat different. The tufts are partly secured by the application of unvulcanized rubber before being placed in the bands or ferrules. Owing to the hardness of rubber after vulcanization, it is necessary to drill holes in that portion of the brush in the band or ferrule before the brush can be nailed.

Applying adhesives.—The adhesive, if cement, is poured into the open end of the metal band over the butt end of the bristles, or it is driven in by a machine operated by compressed air; if vulcanized rubber, the unvulcanized gum is applied to the butt end of the tuft. which is then placed in a kiln to evaporate the benzine or other solvent. After the tuft has been placed in a band or ferrule the brush is ready for vulcanization, the time for which varies according to the character of the work.

Other operations.—Handles are inserted in the ferrules or bands, are nailed into place either by hand or by a power-driven machine, and the loose bristles are eliminated and the brushes trimmed. The brushes are then moistened, wrapped in paper, and placed in a kiln, in order to give the correct position to the bristle. Names or brands are stamped on the handles, which are then varnished or painted by hand, or the brushes are placed in racks and the handles then dipped in varnish or shellac. When dry the brushes are inspected, the bristle end is papered to maintain the shape, and the brushes are placed in boxes for shipment.

COMPOUND BRUSHES.

Hair, tooth, cloth, hat, shoe, and other brushes containing a multiplicity of tufts are subject to similar methods of manufacture.

Preparation of bristles.—Bristles are received in bunches, ranging in diameter from 2 to 12 inches. Before they can be used in the manufacture of brushes, they must be inspected, washed, sterilized, bleached, combed, dragged, cut into proper lengths, mixed, bunched, and weighed.

Preparation of backs or handles.—When wood is used, it is cut into slabs of approximately the length, width, and depth of the brush backs. The slabs are then roughly shaped and planed before being sent to the shaper, who by the use of rapidly revolving knives gives them their final form. The sand wheeler removes the rough edges and smooths the backs, which are then sent to the finishing room, where they are subjected to various processes to give them the desired finish. Holes are drilled in the backs or handles, except in the so-called rubber-cushion and composition-face brushes, the backs of which are routed—that is, hollowed out. If bone is used for the backs and handles, the operations vary according to the grade and quality of the brush to be made. The usual operations are the sawing of the thigh bones into slabs, which are in turn milled to the thickness desired, shaped, drilled, bleached, polished, weighed or counted, and inspected. In pyroxylin plastics are used, the blanks are put though various processes of shaping, drilling, polishing, and inspecting, the number of operations varying in different establishments as well as in the grade of the brush to be made.

Hand-drawn, veneered, or two-piece brushes.—The oldest known method is that employed in making a veneered or two-piece hand-

drawn brush. It is distinctly handwork. The wooden block already shaped into a brush back, flat on top and containing the required number of holes, is sent to the drawer, who passes a loop of fine wire or thread through one of the holes from the back of the block and inserts the proper amount of bristles in the loop. By drawing the wire or thread tight, the tuft is bent double and pulled into the hole. The process is repeated until all the holes in the block are filled. Backs are then fastened to the blocks containing the rows of tufts, either with glue or screws and sometimes both. This method of making a brush is employed more extensively in Japan and in the countries of Europe where labor is cheap, than in the United States. Wherever brushes are made by the hand method the drawing is done to a very great extent in the homes of the employees by women and children.

Machine-drawn brushes.—This process is more manual than mechanical. The machine measures correctly the quantity of bristles and marks their center, thereby facilitating the manipulation of the wire. The operator proceeds in much the same way as in hand drawing, the principal difference being that the bristles are measured and centered by machine instead of by hand. The use of the machine insures smaller wastage.

Handmade, trepanned, solid-back brushes.—The solid-back brush, as its name indicates, consists of one piece only. Vertical holes are bored halfway through the brush block, where they intercept longitudinal channels extending from end to end. A block so prepared is said to be trepanned. Threads are inserted into the channels and drawn up through the vertical holes to the surface by means of a fine hook. The tuft is then placed in the loop and when the thread is drawn taut, the tuft is forced into the hole. The process is repeated until every hole is filled. The ends of the longitudinal channels are plugged to secure the threads. The drawing, like that of the two-piece brush, is done almost exclusively in the homes of employees. This process is much in vogue in France and in Japan and to a less extent in England, Germany, and Austria in the manufacture of hair, tooth, nail, and cloth brushes. Manufacturers in the United States do not follow this method extensively, as labor conditions are against it. Brushes are sometimes made to have the appearance of being trepanned by the insertion of plugs in holes at the end of the brush.

Staple or anchor fastened, solid-back brushes.—Brushes made by this process are more properly designated solid-back brushes than the trepanned brushes, because there are no longitudinal channels but only the holes in which the tufts are secured. An automatic machine has been perfected which measures the bristles, bores the holes, inserts the tuft in the hole and secures it there by means of a wire staple or small steel anchor. This method is used extensively in the United States in the manufacture of hair, tooth, and other toilet brushes. The use of automatic machinery, however, is not confined to the industry in the United States; in fact the automatic tooth-brush machine was invented in Austria, and the automatic machine for making hair brushes is the product of French or Belgian ingenuity. Germany and Austria have manufactured machine-made brushes for many years. Some of the choicest tooth brushes with celluloid handles which come from Austria are machine made. Brush makers in Japan are keenly alive to the exigencies of the situation and are

installing or making preparations to install automatic machinery, either imported or copied. It is claimed that the Japanese brush makers, having the advantage of cheap labor, will be able to place brushes on the market at a price below the range of possibility to American manufacturers. However, those who are familiar with conditions in Japan state that the Japanese worker does not readily adapt himself to factory regulations, and for this reason his output per machine is not equal to that of workers in other countries.

The Japanese workman is not frivolous, but he is not yet trained to our ideals of factory workmen; that is to say, to working steady hours, to working constantly, and being willing to perform the same operation time after time throughout the day. The Japanese workman prefers a little variety in his work, and that is why he excels in carving, in painting, and in things of that kind, where he can put a little originality into the production. His natural traits are so strongly opposed to methodical work that it is impossible to put him on machines and get any kind of results. We have tried machine drawing and it does not pay. The amount of bad workmanship is more than enough to make up for the increase in speed. For that reason we continue the hand drawing and will probably do so until the nation develops characteristics which will make them good, efficient work people. This condition has always jeopardized their industrial future and always will. (From the statement of Mr. W. B. Gibson, importer.)

The use of machinery has shut out labor to some extent. When those brushes (toothbrushes) were drawn by hand a good many of them were made in the homes of people and drawn by them, and that has been eliminated entirely.

About 10 years ago we bought the United States rights to the Gruneberg (Austria) machine, which we still hold. The machine we are now using is not the Gruneberg machine. It is our own. There has been an absolute change in the machine, embodying not only the Gruneberg patents but also the McClintock-Young patents. I do not know if these automatic machines are used in Japan. Mr. Gruneberg is operating his machine in his own factory in Austria, and his brushes are shipped to this country to some extent. One brush, known as the Kleanwell, is a Gruneberg product. That is the celluloid end of it, and the others are bought in France, or wherever the importer can get them. I do not think that there is a greater use of automatic machinery here than abroad, except in our particular line. I think there are very few machines used in the making of other brushes. (From the statement of Mr. William Cordes, of the Florence Manufacturing Co.)

Composition face brushes.—The composition face brush is the result of modern tendencies to produce on a large scale and at low costs. It is an original American process. The brush block is routed—that is, the under side is hollowed out and filled with a plastic composition. Bristles are shaken or sifted by means of an agitator through the holes of a die or pattern. The tufts are forced into the composition which, when hard, firmly holds them in their proper places.

Rubber-cushion brushes.—In rubber-cushion brushes the blocks are routed and undercut. The bristles are sifted by an agitator through the holes of a piece of rubber somewhat larger than the recess of the block. The ends of the bristles protruding through the rubber are ironed down, and liquid rubber is placed over the ironed ends and vulcanized. The rubber containing the tufts is inserted in the back of the brush. A hole is bored in the end of the brush to allow the passage of air under the rubber to give the cushion effect. Hair-brushes are made by this process both in the United States and in England.

Cement-set brushes.—By this method the tufts are secured in the backs of brushes by placing the proper amount of cement in the holes and afterwards inserting the tufts by hand. The method is simple, yet its successful application may be said to be confined, in the United States, to one establishment. On account of the greater

labor cost involved, brushes made by this process are generally the high-priced articles.

Pitch-set brushes.—In this method, sometimes called panwork because the workers sit around a pan of melted pitch, one end of each tuft is dipped in melted pitch and bound with thread. The tufts are then redipped and inserted with a twisting motion into the holes of the handle or back. Counter dusters, floor sweeps, and blacking brushes are among those made by this method.

The foregoing are methods used in the manufacture of multiple tuft brushes. No attempt has been made to describe each single operation in the manufacture of a brush; only general methods have been dealt with. The number of operations is determined not only by the grade of the brush but by the policy of the company in regard to the division of labor. As an illustration of the number of operations in making a toothbrush, one manufacturer reports that there are about 40 operations in making a toothbrush with a bone handle and about 30 for one with a celluloid handle. These operations include the forming and finishing of the handles, inserting the tufts, serrating and shaping of tufts, stamping or printing of names and trade-marks on the handles, inspecting the work at various stages, counting or weighing brushes, grading, sterilizing, and boxing and assembling for shipment; in fact, all operations except the preparation of the bristles.

Production in Foreign Countries.

Brush making in the various countries of Europe is relatively a small industry, and only meager descriptions of industrial conditions are to be found. Apparently the American consuls have not been called upon to make special reports on this industry, as an examination of their reports discloses very little information in regard to the manufacture of brushes. Statistics of production are not published by European nations as a rule; England had its first census of production in 1907.

FRANCE.

The French product consists largely of hair and tooth brushes, and is noted for its graceful and artistic design as well as for its fine quality. The bristles used in the manufacture of brushes are imported from Russia and Rumania. Before the war France also secured bristles from Leipzig. France, however, produces a very fine quality of white bristles. The French possess a superior method of bleaching, and the bristles so treated are much in demand for the manufacture of the better grades of brushes.

In the manufacture of toilet brushes, France follows principally the hand-drawn trepanned method. Much of the drawing is done in homes by women, when not occupied with their household duties, and by children after school hours. Whole villages are engaged in the production of brushes. The contractor delivers the materials to the workers at their homes and afterwards calls for the finished product. In a review of the trade and industrial conditions for the year 1915, Consul General A. M. Thackara, Paris, says:

> The French manufacturer has realized that too much of the work in the manufacture of brushes has been done by hand. Already steps are being taken to change the methods of production by the introduction of machinery after the war.

GERMANY.

Development of the industry.—In the early days of the industry the brushes were coarse and not much skill was required in their manufacture. Home workers, whose products exceeded their domestic requirements, went over the country selling their wares. In the larger cities, however, brush makers maintained fixed places of business, but they were often compelled to visit adjacent markets to dispose of their product.

Brush making as a home industry developed in two centers. One at Schonheide and the other at Todtnau, in the Black Forest region of Baden. According to some authorities, this industry did not start until the beginning of the nineteenth century, but there is evidence from certain decrees that it was in existence as early as 1623.

Capitalism brought about many changes in the industry. The first large factory was erected in 1862 and others soon followed. The large manufacturers began to gain control over the home workers, who were virtually forced into selling their products to their large competitors.

From Todtnau the industry spread into numerous other places; in 1895 there were 440 establishments with 2,143 workers in the Grand Duchy of Baden. In 1907 the number of establishments had decreased to 276, but the number of workers had slightly increased. The decrease in the number of establishments was due to the absorption of the small independent producers by the large establishments. Home work was limited more and more to women and children.

Brush making was also carried on at an early date in the Hartz Mountains of Saxony. It was a home industry closely connected with peddling. It may be assumed that the industry was in existence as early as 1580, from which date brush makers were regular visitors to the Leipzig fairs. In 1854 there were a few establishments that employed outside help.

Concerning the later development of the industry in Germany, some information can be gained from the statistics of occupation and industry. The number of establishments increased from 6,098 in 1882 to 6,191 in 1885, and the number of employees from 15,378 to 22,970. The centralization of the industry is shown by a comparison of the number of establishments in 1895 with the number in 1882. Small factories decreased from 5,804 to 5,666, while medium size factories increased from 270 to 462 and large factories from 24 to 63. A similar comparison of the statistics for the years 1895 and 1907 shows an increase in the number of large factories and a decrease in the small factories. No later official data are available which show the development of the industry in Germany.

Use of machinery.—Some of the machines in use are boring, cutting, grinding, polishing, shaping, planing, stamping, mixing, combing, and washing machines. German manufacturers have also made use of the automatic boring and tuft setting machine. In fact, some advertise that the tufts are fastened with steel anchors, and others claim that they have successfully made toothbrushes with bone handles by machine.

An importer, formerly representing a German firm, gave the following description of labor conditions:

There is no child labor employed at all in our factory. We guarantee our goods to be union made goods, even the quill brushes. I think the proportion of woman labor employed is about 60 per cent. The women work in a separate part of the factory and do a different kind of work. The period of apprenticeship is moved up from year to year until they make the very finest artists' brushes. You see the brush industry is divided into a good many industries, a good many kinds of brushes. A factory may make paintbrushes, shaving brushes, and artists' brushes, and while they are all classified as brushes, each department of the factory is a separate department.

The socialist union over there controls the conditions of apprenticeship. The factory requires the learner to be of age so that he is able to work. The union will not allow men who are not of age to work in the factory. (From the statement of Mr. Walter Grumbacher, importer.)

ENGLAND.

Centers of the industry.—London is the chief center of the brush industry. According to the returns made in the First Census of Production, 1907, there were 44 factories and 55 workshops engaged in the manufacture of brushes in London. Birmingham is also an important center, but the manufacture of brushes is mainly carried on by small firms which, as a rule, buy the bristles, vegetable fibers, and wooden handles or backs ready for use.

Materials.—England, like most of the other brush producing countries, imports many of her raw materials. Bristles, in normal times, were imported from European countries, China, and India. The fact that London is an important bristle market gives the British brush manufacturers an advantage. Bone, used in making toothbrush handles, is imported from Australia, South America, and North America. Fibers are imported from various tropical countries, and wood for brush backs from Scandinavia and from tropical countries. Although England imports many of the raw materials used in brush making, she is not entirely dependent upon foreign countries, as many of the materials can be obtained from her colonies. The strength of British merchants in China assures England of her share of the trade in Chinese bristles.

Methods of manufacture.—Brush making is largely handwork and to a considerable extent is a home industry. Some firms specialize in one branch of the industry; others make all classes except artists' brushes—a branch of the industry carried on by only a few small firms in London. Machinery is being increasingly used, although in Birmingham labor-saving machinery has not replaced handwork even in those shops where it has been installed. That the British brush manufacturers intend to make greater use of machinery is apparent from a report of the convention of the British Brush Manufacturers' Association, recently held in Birmingham.[10] One of the topics discussed at the convention, in connection with reconstruction after the war, was the unemployment resulting from the introduction of new machinery. An interesting feature of the convention was the exhibition of the latest types of filling and boring machines. An operator on one of the filling machines was able to insert 130 knots per minute, and although it was not expected that such a rate of speed could be maintained, it was claimed for the machine that its output would equal that of 10 ordinary drawing hands.

[10] Brooms, Brushes, and Handles, May, 1918.

The goods produced in the early stages of the industry were cheap and inferior in quality and could not compete with the better grades of brushes made in the United States and Europe, where the industry has been established for many years. The Japanese therefore devoted their energies to improving their methods of manufacture and the quality of their brushes. They have met with such success that Japan is to-day (1918) one of the leading countries in the production of toilet brushes, the branch of the industry to which until recently she has confined her efforts. Since the outbreak of the war she has enlarged the scope of her brush manufacture and is now offering in the American market artists' brushes and some of the smaller paint and varnish brushes. The industry is carried on in all parts of Japan but centers in and around Osaka, where over 80 per cent of the brushes are produced.

Materials.—The raw materials used in brush making are nearly all imported. Bristles are obtained from China and Russia; bone from the United States, Australia, China, and South America; wood for hairbrushes is imported in the log, although some Japanese oak and maple are used; thread is from Scotland; chemicals used in bleaching, with the exception of sulphur, are from foreign sources, as are also materials for polishing and finishing and the paper and pasteboard used for boxes. Japan's advantages in regard to materials are her nearness to the Chinese bristle markets and her control of the supply of camphor, an essential ingredient of the pyroxylin plastics used for backs or handles.

Celluloid is an American product. It was discovered here; it has been made a commercial success here by American capital and American brains. Pyroxylin plastic material has been made in Germany, Austria, France, England, and Japan. Perhaps the most dangerous competition to the industry that exists is with Japan, largely because that country controls the world's camphor supply. There used to be three producing points for camphor, one Japan proper, one Formosa, and one China. Chinese camphor was always inferior and in recent years it has not been produced at all. (From the statement of Mr. D. G. Maynard, of the Celluloid Co.)

It is true that Japan produces most of the natural camphor, but Germany made celluloid, I think, from synthetic camphor and produced celluloid which was equal in quality and price to that produced anywhere in the world. (From the statement of Mr. W. B. Gibson, importer.)

Methods of manufacture.—The preparation of the bristles and the shaping, drilling, and polishing of handles and backs are done in the factory. Drawing, one of the principal operations in the manufacture of toilet brushes, is given out to be done in the country; especially is this true of the larger factories. In the manufacture of toilet brushes, the chief difference between the methods employed in Japan and in the United States is the manner in which the tufts of bristles are secured in the back or handle. In Japan the tufts are drawn into the block by hand, whereas in the United States they are generally inserted by automatic machinery and secured by means of staples or anchors.

The use of machinery has not proved profitable in Japan. The only factory now (spring of 1918) using machines is being reorganized. Generally speaking, all operations are performed in the factories. Approximately 90 per cent of the wage earners are employed in factories. Sanitary arrangements are crude, but the interiors are kept clean, especially in the drawing factories, which are generally in rural districts. (From the statement of Mr. P. B. T. Williams, of Williams Brush Co., importers.)

We have in the country what we call drawing factories. Therse small factories are established in the villages, in sections where it is possible to get drawing help; the help comes into the drawing factories and draws the bristles into the brushes in those

The quantity produced is not shown, as under the limitations imposed by the census act it was not possible to require manufacturers to state the quantity of their output in detail. A number of firms, whose production covered about one-third of the value of the total output, however, reported the number of brushes they made, and the value per dozen computed on their returns is as follows: Household and trade brooms and brushes, $1.28; painters', decorators', and whitewashers' brushes, $4; fancy and toilet brushes, not of bone, $3.60; bone brushes, $0.97; and machinery brushes, $5.56. In the following table the value of the output is given for the various branches of the trade.

Value of production of brushes in Great Britain, 1907.

[Figures from Census of Production, Great Britain, 1907.][1]

	England, Wales, and Ireland.	Scotland.	United Kingdom.
Household and trade brooms and brushes	$4,574,510.00	$316,322.50	$4,890,832.50
Painters', decorators', and whitewashers' brushes	1,635,144.00	145,995.00	1,781,139.00
Fancy and toilet brushes (not of bone)	807,839.00	4,866.50	812,705.50
Bone brushes	457,451.00	.....	457,451.00
Machinery brushes	452,584.50	34,065.50	486,650.00
Brushes not separately distinguished	223,859.00	.....	223,859.00
Total brushes	8,151,387.50	[2] 501,249.50	8,652,637.00
Stock, handles, etc	92,463.50	.....	92,463.50
Other products	111,929.50	.....	111,929.50
Total value of goods made	8,355,780.50	501,249.50	8,857,030.00
Amount received for work for the trade	38,932.00	.....	38,932.00
Total value of goods made and work done	8,394,712.50	501,249.50	8,895,962.00
Cost of materials used	4,443,114.50	272,524.50	4,715,638.50
Net output	3,951,598.00	228,725.50	4,180,323.50

[1] Pounds converted to United States equivalent at $4.8665 per £.
[2] Does not include brushes to the value of $121,552.50 returned on schedules for other trades and $24,332.50 made in philanthropic institutions.

AUSTRIA-HUNGARY.

Very little descriptive material is available in regard to the brush industry in Austria-Hungary. As in other brush-producing countries of Europe, much of the work is done by hand not only in homes but in the factories as well. Austria makes use of machinery, however, in the production of toilet brushes. The automatic toothbrush boring and filling machine was invented in Austria. The patent rights were purchased by an American concern, which has since developed and improved the original type. Austria uses pyroxylin plastics as well as bone in the manufacture of toothbrushes: the former material is better adapted to the use of automatic machinery than the latter.

JAPAN.

The brush industry in Japan has been in existence a little over a quarter of a century. An enterprising American, realizing the advantages that Japan offered in the way of abundant and cheap labor, began the manufacture of brushes in that country in 1891. Training the workers to become skilled artisans and finding a market for the product were the chief difficulties in establishing a trade.

is not observed as holiday, but the four holidays in each month usually fall on the first day of the week. For the drawing that is given out to be done in the country, there are no regular working hours. Families including small children, engaged on this kind of work, do it when not occupied with their small farms, chiefly on rainy days and at night.

In regard to Government assistance in the brush industry, Mr. G. S. Gibson an importer, states that the Japanese Government does not subsidize brush manufacturers.

Imports and exports.—Statistics of imports of brushes are not shown in official publications. There is not much of a market for good brushes in Japan, even for the domestic producers Japanese hotel managers supply a cheap toothbrush, which is used but once and then thrown away. Round and flat paint brushes, however, are imported, as are various household brushes, which up to the present time (1918) have not been produced to any extent.

Practically all of the better grades of brushes made in Japan are exported. For the 10 years 1907 to 1916, the value of toothbrushes exported ranged from 24 to 29 cents per dozen; hairbrushes from $1.42 to $2.30 per dozen; nail brushes 34 to 58 cents per dozen; and clothing brushes $0.85 to $1.60 per dozen. The United States is Japan's best customer. In only one year since 1907 has the United States taken less than 40 per cent of the total value of brushes exported by Japan. The percentage fell to 33.18 in 1915. In these years Japan increased the percentage of exports to Great Britain and other countries, because of the activities of British agents in making purchases for their Government and because of the decrease in exports by the brush-producing countries of Europe. In 1919 the total value of all brushes exported to all countries amounted to $5,128,404, divided as follows: Toothbrushes, 5,554,228 dozens, valued at $3,255,426; hairbrushes, 370,056 dozens, valued at $1,160,340; nail brushes, 285,936 dozens, valued at $170,814; clothing brushes, 56,304 dozens, valued at $166,830; all other brushes valued at $374,994. The following tables give statistics of production for the years 1906 to 1918, inclusive, and of exports for the years 1907 to 1919, inclusive.

Quantity and value of brushes produced in Japan, 1906–1918.[1]

Year.	Number of factories or workshops.	Employees.			Total brushes.	
		Total.	Male.	Female.	Quantity (dozens).	Value.
1906	213	3,118	1,470	1,648	4,450,448	$1,129,805
1907	259	3,230	1,567	1,663	4,132,210	1,365,793
1908	277	3,091	1,584	1,507	5,514,195	1,757,175
1909	301	3,197	1,803	1,394	5,280,369	1,427,513
1910	288	3,258	1,905	1,353	5,037,087	1,472,410
1911	402	3,277	1,790	1,487	5,885,174	1,309,626
1912	387	2,976	1,605	1,371	4,290,754	1,173,826
1913	436	3,311	1,915	1,396	6,302,388	1,676,370
1914	468	3,683	2,003	1,680	5,280,911	1,600,358
1915	552	4,239	2,356	1,883	4,809,169	1,686,977
1916	667	5,485	2,947	2,538	6,213,158	2,145,820
1917	771	6,181	3,202	2,979	8,671,265	2,916,248
1918	777	6,811	3,087	3,724	10,995,276	4,678,306

[1] Statistical Reports of the Department of Agriculture and Commerce, Japan. (Yen converted to United States money at $0.498 per yen.)

Quantity and value of brushes produced in Japan, 1906–1918—Continued.

Year.	Toothbrushes.		Hairbrushes.	
	Quantity (dozens).	Value.	Quantity (dozens).	Value.
1906	4,228,932	$624,109	105,267	$87,952
1907	3,938,661	777,226	79,798	97,134
1908	5,331,234	1,140,526	111,049	187,548
1909	4,923,234	703,9[illegible]2	251,562	297,846
1910	4,678,269	712,603	231,711	296,833
1911	5,518,035	748,848	116,336	204,886
1912	3,845,749	649,483	120,952	212,000
1913	5,652,238	1,036,600	201,913	242,072
1914	4,551,875	973,824	209,777	250,496
1915	3,757,794	827,756	329,298	436,725
1916	4,782,581	1,032,497	199,994	350,277
1917	7,148,544	1,803,874	122,421	193,273
1918	9,323,043	3,495,460	439,074	597,221

Year.	Paste brushes.[1]		Other brushes.	
	Quantity (dozens).	Value.	Quantity (dozens).	Value.
1906			116,249	$417,744
1907			113,751	491,433
1908			71,912	429,101
1909			105,573	425,675
1910			127,107	462,974
1911			250,803	355,892
1912			324,053	312,343
1913			448,237	397,698
1914			519,259	376,038
1915	134,356	$51,654	587,721	370,842
1916	153,272	46,385	1,077,311	716,661
1917	137,501	55,633	1,262,799	863,466
1918	152,553	73,319	1,080,006	512,405

[1] Not separately stated prior to 1915.

Thirteen years' record of Japanese brush exports, 1907–1919.[1]

Year.	Total brush exports to—			Toothbrush exports to—					
	All countries.	United States.		All countries.		United States.			
	Value.	Value.	Per cent of total value to all countries.	Quantity (dozens).	Value.	Quantity (dozens).	Value.	Per cent of total quantity to all countries.	Per cent of total value to all countries.
1907	$606,132	$405,400	66.88	1,298,800	$361,952	817,111	$243,807	62.94	67.35
1908	560,498	403,370	71.96	1,238,158	347,386	857,274	252,121	69.23	72.57
1909	599,924	413,924	68.99	1,275,750	362,526	816,231	252,027	63.98	69.51
1910	862,699	631,718	73.22	1,879,108	542,817	1,297,484	395,129	69.04	72.79
1911	1,002,206	636,629	63.52	1,756,744	456,637	987,843	272,350	56.23	59.64
1912	936,759	510,916	54.54	1,886,518	467,536	902,625	246,659	47.84	52.76
1913	1,137,497	622,512	54.71	1,611,527	407,326	647,235	190,713	40.16	46.82
1914	1,342,258	744,291	55.45	1,895,042	530,672	844,207	274,831	44.55	51.78
1915	1,928,268	639,990	33.18	3,165,938	765,035	984,667	228,831	31.10	29.91
1916	2,640,249	1,068,928	40.48	3,602,017	1,011,521	1,421,863	444,736	39.47	43.97
1917	3,025,131	1,850,990	61.18	5,224,875	1,960,792	3,426,783	1,370,048	65.59	69.87
1918	5,279,120	2,344,916	44.42	8,151,108	3,804,762	4,083,312	1,896,597	50.10	49.85
1919	5,128,404	2,275,362	44.37	5,554,228	3,255,426	2,777,976	1,652,862	50.01	50.77

[1] Included in "Other brush exports" prior to 1912.

Thirteen years' record of Japanese brush exports, 1907–1919—Continued.

Year.	Hairbrush exports to—					
	All countries.		United States.			
	Quantity (dozens).	Value.	Quantity (dozens).	Value.	Per cent of total quantity to all countries.	Per cent of total value to all countries.
1907	49,591	$114,006	34,294	$87,172	69.15	76.46
1908	54,019	105,620	43,244	87,501	80.05	82.84
1909	56,151	108,189	41,179	82,465	73.33	76.22
1910	90,120	155,516	71,205	125,047	79.01	80.41
1911	125,043	223,533	81,116	153,263	64.87	68.56
1912	166,014	285,244	89,983	168,754	54.20	59.16
1913	272,894	463,282	165,476	292,007	60.63	63.03
1914	286,585	456,484	176,504	266,909	61.58	58.47
1915	416,624	759,202	140,217	251,701	33.65	33.15
1916	769,358	1,092,085	261,063	451,344	33.93	41.33
1917	416,310	526,343	222,367	270,009	53.41	51.30
1918	518,583	792,047	236,344	293,923	45.77	37.11
1919	370,056	1,160,340	139,512	347,604	37.70	29.96

Year.	Nailbrush exports to—					
	All countries.		United States.			
	Quantity (dozens).	Value.	Quantity (dozens).	Value.	Per cent of total quantity to all countries.	Per cent of total value to all countries.
1907	134,484	$71,119	106,076	$51,806	78.87	72.85
1908	107,575	57,705	82,302	41,164	76.50	71.33
1909	91,482	52,303	66,006	34,145	72.15	65.28
1910	156,392	73,084	118,063	48,857	75.49	66.85
1911	316,104	183,824	215,186	114,452	68.07	62.26
1912	251,327	91,085	160,246	58,517	63.75	64.24
1913	385,778	160,077	267,647	106,382	69.37	66.45
1914	458,617	204,715	302,578	137,091	65.97	66.97
1915	577,383	195,688	294,115	117,415	50.93	60.00
1916	429,415	213,642	229,298	134,628	53.39	63.01
1917	370,772	138,658	238,568	86,626	64.34	62.48
1918	341,067	141,338	135,817	52,836	39.82	37.38
1919	285,936	170,814	129,092	70,716	45.14	41.40

Clothing brush exports to [1]—

Year.	All countries.		United States.			
	Quantity (dozens).	Value.	Quantity (dozens).	Value.	Per cent of total quantity to all countries.	Per cent of total value to all countries.
1912	50,319	$59,053	12,805	$29,982	25.44	50.77
1913	57,803	73,704	9,936	27,567	17.19	37.40
1914	60,001	96,004	13,344	39,592	22.23	41.23
1915	103,798	133,205	23,745	35,047	22.87	26.31
1916	163,378	139,198	29,966	31,839	18.34	22.87
1917	176,699	160,408	68,722	70,284	38.89	43.82
1918	131,625	150,308	20,351	25,287	15.46	16.82
1919	56,304	166,830	20,628	99,600	36.64	59.70

[1] Annual returns of the foreign trade of the Empire of Japan. Yen converted into United States money at $0.498 per yen.

Other brush exports to—

Year.	All countries.	United States.	
	Value.	Value.	Per cent of total value to all countries.
1907	$59,055	$22,615	38.29
1908	49,787	22,584	45.36
1909	76,906	45,287	58.88
1910	91,282	62,685	68.68
1911	138,212	96,564	69.86
1912	33,841	7,004	20.69
1913	33,108	5,843	17.65
1914	54,383	25,868	47.56
1915	75,138	6,996	9.31
1916	183,803	6,381	3.47
1917	238,930	54,023	22.61
1918	390,665	76,273	19.52
1919	374,994	104,580	27.89

General Statistics.

Domestic production of brushes for the years 1849, 1859, 1869, 1909, and 1914.[1]

(Abstract of the Census of Manufactures, 1914.)

	Number of establishments.	Wage earners (average number).	Primary horsepower.	Expressed in thousands.				
				Capital.	Wages.	Cost of materials.	Value of products.[2]	Value added by manufacture.
UNITED STATES.								
1914	359	7,213	6,388	$14,333	$3,461	$9,327	$17,894	$8,567
1909	384	6,954	4,967	11,092	3,041	7,187	14,694	7,507
1869	157	2,425	278	1,684	691	1,313	2,695	1,382
1859	121	2,378	.....	914	594	994	2,097	1,103
1849	146	2,405	.....	711	533	638	1,574	936
STATES, 1914.								
California	8	15	20	29	12	30	62	32
Colorado	3	7	9	9	5	5	18	13
Connecticut	11	130	153	147	61	154	299	145
Illinois	32	395	267	858	230	619	1,156	537
Maine	3	19	42	20	8	16	37	21
Maryland	9	559	813	1,548	297	1,051	1,862	811
Massachusetts	29	1,437	878	3,359	717	2,231	3,910	1,679
Michigan	10	157	51	325	73	165	348	183
Minnesota	5	53	29	124	33	173	244	71
Missouri	10	43	20	126	24	50	105	55
New Jersey	22	822	1,024	1,579	411	888	1,814	926
New York	107	1,568	1,248	3,050	772	1,840	3,835	1,995
Ohio	16	677	848	1,311	298	732	1,544	812
Pennsylvania	46	385	273	807	204	597	1,137	540
Rhode Island	10	86	34	69	38	66	138	72
Wisconsin	11	129	155	244	62	93	270	177
All other States	27	731	524	728	216	617	1,115	498

[1] The manufacture of brooms and that of brushes were shown as one industry at the censuses from 1879 to 1904, inclusive.

[2] In 1914, toilet brushes to the value of $92,369, paint and varnish brushes to the value of $309,169, and "all other" brushes to the value of $65,399 were reported by establishments in other classifications.

General imports of brushes into the United States, by countries, 1910–1920.[1]

Imported from—	1910	1911	1912	1913	1914	1915	1916
France	$677,091	$801,847	$749,189	$753,029	$682,003	$312,991	$265,386
Japan	510,552	736,781	602,923	604,490	665,952	757,421	843,020
Germany	281,471	416,900	448,550	423,189	514,240	308,167	46,330
England	230,267	256,667	211,998	263,812	267,734	221,891	112,401
Austria-Hungary	7,377	12,967	36,906	32,877	29,734	24,348	6,500
All other	16,442	15,904	17,683	11,896	21,190	19,471	19,173
Total	1,732,200	2,241,066	2,067,149	2,089,303	2,180,853	1,644,189	1,292,810

Imported from—	1917	1918	1918[2]	1919[2]		1920[2]	
				Number.		*Number.*	
France	$259,142	$166,040	$109,817	1,459,472	$106,424	.....	.....
Japan	1,800,300	2,875,071	2,946,570	44,624,954	2,524,550	.....	.....
Germany	1,305	.....	.....	853,112	8,696	.....	.....
England	121,351	95,452	33,148	268,634	72,091	.....	.....
Austria-Hungary	2,069	.....	.....	366	217	.....	.....
All other	25,909	33,580	14,138	1,137,463	44,932	.....	.....
Total	2,209,976	3,170,143	3,103,673	48,344,001	2,756,910	58,776,117	$4,584,598

[1] Includes small amount of feather dusters and hair pencils.
[2] Calendar year.

Imports into the United States of brushes for consumption, 1894–1920.[1]

(Under general tariff.)

	Value.		Value.		Value.
Fiscal years:		Fiscal years—Con.		Fiscal years—Con.	
1894	$550,334.15	1904	$1,369,757.31	1914	$2,171,511.94
1895	658,083.20	1905	1,308,763.45	1915	1,670,821.00
1896	766,142.31	1906	1,380,133.92	1916	1,315,177.00
1897	784,891.05	1907	1,597,045.82	1917	2,195,659.00
1898	735,271.11	1908	1,653,347.68	1918	2,988,692.00
1899	891,161.35	1909	1,435,870.53	Calendar years:	
1900	964,220.03	1910	1,744,546.05	1918	2,900,291.00
1901	1,134,395.54	1911	2,150,335.09	1919	2,403,077.00
1902	1,151,266.37	1912	2,074,297.71	1920	4,094,822.00
1903	1,238,587.06	1913	2,074,134.86	1921[2]	1,509,144.00

[1] Includes small amounts of feather dusters and hair pencils.

Rates of duty and revenue derived from imports of brushes, 1910–1920.

	Rates of duty.	Imports for consumption.	Duties collected.	Actual and computed ad valorem rate.
Fiscal years:	*Per cent.*			*Per cent.*
1910	40	$1,744,546.05	$697,818.42	40
1911	40	2,150,335.09	860,134.03	40
1912	40	2,074,297.71	829,719.08	40
1913	40	2,074,134.86	829,653.94	40
1914	[1] 40	[1] 563,158.95	[1] 225,263.58	40
	[2] 35	[2] 1,608,352.99	[2] 562,923.55	35
1915	35	1,670,821.00	584,787.35	35
1916	35	1,315,177.00	460,311.95	35
1917	35	2,195,659.00	768,480.65	35
1918	35	2,988,692.00	1,045,709.00	35
Calendar years:				
1918	35	2,900,291.00	1,015,102.00	35
1919	35	2,403,077.00	841,075.00	35
1920	35	4,094,822.00	1,432,646.00	35
1921[3]	35	1,509,144.00	528,200.00	35

[1] Act of Aug. 5, 1909.
[2] Act of Oct. 3, 1913.
[3] 6 months ending June 30, 1921.

Imports for consumption classified, 1919 and 1920.

Kinds.	1919			1920		
	Quantity (number).	Value.	Duties collected.	Quantity (number).	Value.	Duties collected.
Toilet brushes[1]	43,835,308	$2,208,099	$772,835	41,880,389	$3,004,431	$1,051,551
All other brushes	7,899,454	205,327	71,864	7,044,346	196,768	68,869
Feather dusters	30,800	1,746	611	884,988	9,257	3,240
Hair pencils	397,262	5,349	1,872	934,468	9,603	3,361
Total	52,162,824	2,420,521	847,182	50,744,191	3,220,059	1,127,021

[1] Comprises tooth, hair, nail, or hand.

Calendar years.

Kinds.	1919			1920		
	Quantity (number).	Value.	Duties collected.	Quantity (number).	Value.	Duties collected.
Toilet brushes	36,476,920	$2,215,446	$775,406	41,437,232	$3,594,100	$1,257,395
All other brushes	6,228,647	175,372	61,377	10,775,716	464,322	162,512
Feather dusters	498,388	5,178	1,812	840,523	11,530	4,035
Hair pencils	737,459	7,081	2,478	1,212,043	24,870	8,704
Total	43,941,414	2,403,077	841,073	54,265,514	4,094,822	1,432,646

Kinds.	1921		
	Quantity (number).	Value.	Duties collected.
Toilet brushes	15,234,626	$1,247,807	$436,732
All other brushes	5,692,521	244,271	85,494
Feather dusters	139,387	4,848	1,697
Hair pencils	1,143,246	12,218	4,277
Total	.....	1,509,144	528,200

Domestic exports of brushes from the United States, by countries, 1913–1920.[1]

Exported to—	1913	1914	1915	1916	1917
Canada	$237,359	$191,647	$128,851	$143,421	$247,997
Cuba	32,650	31,717	39,953	66,714	81,252
Australia	33,183	34,572	28,016	29,838	47,307
Mexico	25,066	17,640	9,618	13,695	56,849
England	23,607	27,213	301,865	621,104	70,038
Panama	13,954	14,309	12,076	25,190	36,947
Argentina	8,678	10,561	4,331	28,512	39,994
British India	5,349	6,718	4,440	6,430	16,933
Brazil	4,592	2,440	3,583	20,921	29,666
All others	101,854	113,092	72,183	176,437	236,647
Total	486,292	449,909	604,916	1,132,262	863,630

[1] Exports of brushes were not separately shown prior to 1913.

Domestic exports of brushes from the United States, by countries, 1913–1920—Continued.

Exported to—	1918	1918[1]	1919[1]	1920[1]
Canada	$251,858	$297,754	$350,979	.....
Cuba	131,610	144,245	130,891	.....
Australia	44,069	47,989	69,788	.....
Mexico	63,466	59,740	113,382	.....
England	77,400	126,752	42,369	.....
Panama	35,066	31,239	25,510	.....
Argentina	39,285	36,176	86,945	.....
British India	15,983	14,542	46,404	.....
Brazil	31,242	29,494	82,255	.....
All others	294,106	311,085	522,032	.....
Total	984,085	1,099,016	1,470,555	$2,085,821

[1] Calendar year.

Imports, revenues, rates of duty, production, exports, and consumption of brushes for representative years of the tariff acts of 1894, 1897, 1909, and 1913.

	Act of Aug. 27, 1894.	Act of July 24, 1897.	Act of Aug. 5, 1909.	Act of Oct. 3, 1913.
	1896	1905	1912	1914
Imports:				
Value	$766,142.81	$1,308,763.45	$2,074,297.71	[1] $2,171,511.94
Duties	$268,149.99	$523,505.38	$829,719.08	$788,187.13
Rate (per cent)	35	40	40	35
Production	.....	[3] $21,103,776.00	[3] $14,694,003.00	17,894,476.00
Domestic exports	[2] $180,183.00	[2] $327,083.00	[2] $693,223.00	$449,909.00
Consumption	.....	.....	.....	$19,616,078.94

[1] Includes $563,158.95, July 1 to Oct. 3, 1913, at 40 per cent.
[2] Includes brooms.
[3] Census of production, 1909.

Wholesale prices of bristles, and brushes, by months, quarters, and years, 1913–1915.[1]

	Bristles.						Brushes.		
	Chunking, No. 5.	Tientsin, superior, No. 5.	Hankow, superior, No. 5.	Chunking, superior, No. 3.	Tientsin, superior, No. 3.	Hankow, superior, No. 3.	Hair brush, prophylactic, No. 500.	Hand brush, prophylactic, No. 400.	Tooth brush, prophylactic, No. 1.
Market	New York.	New York.	New York.	New York.	New York.	New York.	Mass.	Mass.	Mass.
Unit	Pound.	Pound.	Pound.	Pound.	Pound.	Pound.	Gross.	Gross.	Gross.
Base price	$2.5250	$2.2250	$2.0750	$1.0250	$0.7200	$0.6750	$90.0000	$72.0000	$23.2500
1913—Year	2.6000	2.2500	2.1500	1.0500	.7000	.6700	90.0000	72.0000	23.2500
Quarters—									
First	2.6000	2.2500	2.1500	1.0500	.7000	.6700	90.0000	72.0000	23.2500
Second	2.6000	2.2500	2.1500	1.0500	.7000	.6700	90.0000	72.0000	23.2500
Third	2.6000	2.2500	2.1500	1.0500	.7000	.6700	90.0000	72.0000	23.2500
Fourth	2.6000	2.2500	2.1500	1.0500	.7000	.6700	80.0000	72.0000	23.2500
Months—									
January	2.6000	2.2500	2.1500	1.0500	.7000	.6700	90.0000	72.0000	23.2500
February	2.6000	2.2500	2.1500	1.0500	.7000	.6700	90.0000	72.0000	23.5000
March	2.6000	2.2500	2.1500	1.0500	.7000	.6700	90.0000	72.0000	23.2500
April	2.6000	2.2500	2.1500	1.0500	.7000	.6700	90.0000	72.0000	23.2500
May	2.6000	2.2500	2.1500	1.0500	.7000	.6700	90.0000	72.0000	23.2500
June	2.6000	2.2500	2.1500	1.0500	.7000	.6700	90.0000	72.0000	23.2500
July	2.6000	2.2500	2.1500	1.0500	.7000	.6700	90.0000	72.0000	23.5000
August	2.6000	2.2500	2.1500	1.0500	.7000	.6700	90.0000	72.0000	23.5000
September	2.6000	2.2500	2.1500	1.0500	.7000	.6700	90.0000	72.0000	23.2500
October	2.6000	2.2500	2.1500	1.0500	.7000	.6700	90.0000	72.0000	23.2500
November	2.6000	2.2500	2.1500	1.0500	.7000	.6700	90.0000	72.0000	23.2500
December	2.6000	2.2500	2.1500	1.0500	.7000	.6700	90.0000	72.0000	23.2500
1914—Year	2.5875	2.2750	2.1625	1.0250	.7800	.7225	90.0000	72.0000	23.2500
Quarters—									
First	2.4500	2.2000	2.0000	1.0000	.7400	.6800	90.0000	72.0000	23.2500
Second	2.4500	2.2000	2.0000	1.0000	.7400	.6800	90.0000	72.0000	23.2500
Third	2.4500	2.2000	2.0000	1.0000	.7400	.6800	90.0000	72.0000	23.2500
Fourth	3.0000	2.5000	2.6500	1.1000	.9000	.8500	90.0000	72.0000	23.2500
Months—									
January	2.4500	2.2000	2.0000	1.0000	.7400	.6800	90.0000	72.0000	23.2500
February	2.4500	2.2000	2.0000	1.0000	.7400	.6800	90.0000	72.0000	23.2500
March	2.4500	2.2000	2.0000	1.0000	.7400	.6800	90.0000	72.0000	23.2500
April	2.4500	2.2000	2.0000	1.0000	.7400	.6800	90.0000	72.0000	23.2500
May	2.4500	2.2000	2.0000	1.0000	.7400	.6800	90.0000	72.0000	23.2500
June	2.4500	2.2000	2.0000	1.0000	.7400	.6800	90.0000	72.0000	23.2500
July	2.4500	2.2000	2.0000	1.0000	.7400	.6800	90.0000	72.0000	23.2500
August	2.4500	2.2000	2.0000	1.0000	.7400	.6800	90.0000	72.0000	23.2500
September	2.4500	2.2000	2.0000	1.0000	.7400	.6800	90.0000	72.0000	23.2500
October	3.0000	2.5000	2.6500	1.1000	.9000	.8500	90.0000	72.0000	23.2500
November	3.0000	2.5000	2.6500	1.1000	.9000	.8500	90.0000	72.0000	23.2500
December	3.0000	2.5000	2.6500	1.1000	.9000	.8500	90.0000	72.0000	23.2500
1915—Year	2.5500	2.5000	2.5667	1.0667	.8875	.8375	90.0000	72.0000	23.2500
Quarters—									
First	2.5500	2.5000	2.6500	1.1000	.9000	.8500	90.0000	72.0000	23.2500
Second	2.5500	2.5000	2.6500	1.1000	.9000	.8500	90.0000	72.0000	23.2500
Third	2.5500	2.5000	2.5667	1.0667	.9000	.8500	90.0000	72.0000	23.2500
Fourth	2.5500	2.5000	2.4000	1.0000	.8500	.8000	90.0000	72.0000	23.2500
Months—									
January	2.5500	2.5000	2.6500	1.1000	.9000	.8500	90.0000	72.0000	23.2500
February	2.5500	2.5000	2.6500	1.1000	.9000	.8500	90.0000	72.0000	23.2500
March	2.5500	2.5000	2.6500	1.1000	.9000	.8500	90.0000	72.0000	23.2500
April	2.5500	2.5000	2.6500	1.1000	.9000	.8500	90.0000	72.0000	23.2500
May	2.5500	2.5000	2.6500	1.1000	.9000	.8500	90.0000	72.0000	23.2500
June	2.5500	2.5000	2.6500	1.1000	.9000	.8500	90.0000	72.0000	23.2500
July	2.5500	2.5000	2.6500	1.1000	.9000	.8500	90.0000	72.0000	23.2500
August	2.5500	2.5000	2.6500	1.1000	.9000	.8500	90.0000	72.0000	23.2500
September	2.5500	2.5000	2.4000	1.0000	.9000	.8500	90.0000	72.0000	23.2500
October	2.5500	2.5000	2.4000	1.0000	.8500	.8000	90.0000	72.0000	23.2500
November	2.5500	2.5000	2.4000	1.0000	.8500	.8000	90.0000	72.0000	23.2500
December	2.5500	2.5000	2.4000	1.0000	.8500	.8000	90.0000	72.0000	23.2500

[1] War Industries Board, Price Bulletin No. 28.

Wholesale prices of bristles and brushes, by months, quarters, and years, 1916–1918.[1]

	Bristles.						Brushes.		
	Chunking, No. 5.	Tientsin, superior, No. 5.	Hankow, superior. No. 5.	Chunking, superior, No. 3.	Tientsin, superior, No. 3.	Hankow, superior. No. 3.	Hair brush, prophylactic, No. 500.	Hand brush, prophylactic, No. 400.	Tooth brush, prophylactic, No. 1.
Market	New York.	New York.	New York.	New York.	New York.	New York.	Mass.	Mass.	Mass.
Unit	Pound.	Pound.	Pound.	Pound.	Pound.	Pound.	Gross.	Gross.	Gross.
Base price	$2.5250	$2.2250	$2.0750	$1.0250	$0.7200	$0.6750	$90.0000	$72.0000	$23.2500
1916—Year	2.5000	2.3208	2.3292	1.0000	.7500	.7417	90.0000	72.0000	24.1875
Quarters—									
First	2.5000	2.3500	2.3000	.9500	.7500	.7300	90.0000	72.0000	23.2500
Second	2.5000	2.3333	2.3167	.9500	.7500	.7367	90.0000	72.0000	23.2500
Third	2.5000	2.3000	2.3500	1.0500	.7500	.7500	90.0000	72.0000	23.2500
Fourth	2.5000	2.3000	2.3500	1.0500	.7500	.7500	90.0000	72.0000	27.0000
Months—									
January	2.5000	2.3500	2.3000	.9500	.7500	.7300	90.0000	72.0000	23.2500
February	2.5000	2.3500	2.3000	.9500	.7500	.7300	90.0000	72.0000	23.2500
March	2.5000	2.3500	2.3000	.9500	.7500	.7300	90.0000	72.0000	23.2500
April	2.5000	2.3500	2.3000	.9500	.7500	.7300	90.0000	72.0000	23.2500
May	2.5000	2.3500	2.3000	.9500	.7500	.7300	90.0000	72.0000	23.2500
June	2.5000	2.3000	2.3500	.9500	.7500	.7500	90.0000	72.0000	23.2500
July	2.5000	2.3000	2.3500	1.0500	.7500	.7500	90.0000	72.0000	23.2500
August	2.5000	2.3000	2.3500	1.0500	.7500	.7500	90.0000	72.0000	23.2500
September	2.5000	2.3000	2.3500	1.0500	.7500	.7500	90.0000	72.0000	23.2500
October	2.5000	2.3000	2.3500	1.0500	.7500	.7500	90.0000	72.0000	27.0000
November	2.5000	2.3000	2.3500	1.0500	.7500	.7500	90.0000	72.0000	27.0000
December	2.5000	2.3000	2.3500	1.0500	.7500	.7500	90.0000	72.0000	27.0000
1917—Year	3.1375	2,5167	2,6917	1.3792	.7500	.8300	90.0000	72.0000	27.0000
Quarters—									
First	3.0000	2.3000	2.5000	1.2500	.7500	.7800	90.0000	72.0000	27.0000
Second	3.0000	2.4000	2.6000	1.3000	.7500	.8300	90.0000	72.0000	27.0000
Third	3.2000	2.5667	2.7333	1.4333	.7500	.8433	90.0000	72.0000	27.0000
Fourth	3.3500	2.8000	2.9333	1.5333	.7500	.8667	90.0000	72.0000	27.0000
Months—									
January	3.0000	2.3000	2.5000	1.2500	.7500	.7800	90.0000	72.0000	27.0000
February	3.0000	2.3000	2.5000	1.2500	.7500	.7800	90.0000	72.0000	27.0000
March	3.0000	2.3000	2.5000	1.2500	.7500	.7800	90.0000	72.0000	27.0000
April	3.0000	2.4000	2.6000	1.3000	.7500	.8300	90.0000	72.0000	27.0000
May	3.0000	2.4000	2.6000	1.3000	.7500	.8300	90.0000	72.0000	27.0000
June	3.0000	2.4000	2.6000	1.3000	.7500	.8300	90.0000	72.0000	27.0000
July	3.0000	2.4000	2.6000	1.3000	.7500	.8300	90.0000	72.0000	27.0000
August	3.3000	2.6500	2.8000	1.5000	.7500	.8500	90.0000	72.0000	27.0000
September	3.3000	2.6500	2.8000	1.5000	.7500	.8500	90.0000	72.0000	27.0000
October	3.3000	2.6500	2.8000	1.5000	.7500	.8500	90.0000	72.0000	27.0000
November	3.3000	2.6500	2.8000	1.5000	.7500	.8500	90.0000	72.0000	27.0000
December	3.4500	3.1000	3.2000	1.6000	.7500	.9000	90.0000	72.0000	27.0000
1918—Year	4.6875	3.8375	4.3625	1.7500	.9675	1.0958	90.0000	72.0000	30.0000
Quarters—									
First	3.6000	3.1000	3.5000	1.6000	.7500	1.0000	90.0000	72.0000	30.0000
Second	4.5500	3.5000	4.2500	1.7000	.9200	1.0000	90.0000	72.0000	30.0000
Third	5.1833	4.2333	4.7500	1.8333	1.0733	1.1667	90.0000	72.0000	30.0000
Fourth	5.4167	4.5167	4.9500	1.8667	1.1267	1.2167	90.0000	72.0000	30.0000
Months—									
January	3.6000	3.1000	3.5000	1.6000	.7500	1.0000	90.0000	72.0000	30.0000
February	3.6000	3.1000	3.5000	1.6000	.7500	1.0000	90.0000	72.0000	30.0000
March	3.6000	3.1000	3.5000	1.6000	.7500	1.0000	90.0000	72.0000	30.0000
April	4.5500	3.5000	4.2500	1.7000	.9200	1.0000	90.0000	72.0000	30.0000
May	4.5500	3.5000	4.2500	1.7000	.9200	1.0000	90.0000	72.0000	30.0000
June	4.5500	3.5000	4.2500	1.7000	.9200	1.0000	90.0000	72.0000	30.0000
July	4.5500	3.5000	4.2500	1.7000	.9200	1.0000	90.0000	72.0000	30.0000
August	5.5000	4.6000	5.0000	1.9000	1.1500	1.2500	90.0000	72.0000	30.0000
September	5.5000	4.6000	5.0000	1.9000	1.1500	1.2500	90.0000	72.0000	30.0000
October	5.5000	4.6000	5.0000	1.9000	1.1500	1.2500	90.0000	72.0000	30.0000
November	5.5000	4.6000	5.0000	1.9000	1.1500	1.2500	90.0000	72.0000	30.0000
December	5.2500	4.3500	4.8500	1.8000	1.0800	1.1500	90.0000	72.0000	30.0000

[1] War Industries Board, Price Bulletin No. 28.

Rates of duty and tariff classifications under tariff acts of 1883, 1890, 1894, 1897, 1909, and 1913.

Act of—	Par.	Classification or description.	Rates of duty ad valorem.
			Per cent.
1883	404	Brushes of all kinds	30
1890	427	Brushes * * * of all kinds, including feather dusters and hair pencils in quills	40
1894	314	Hair pencils, brushes, and feather dusters	35
1897	410	Brushes, * * * and feather dusters of all kinds and hair pencils in quills or otherwise	40
1909	423	Brushes, * * * and feather dusters of all kinds, and hair pencils in quills or otherwise	40
1913	336	* * * brushes and feather dusters of all kinds and hair pencils in quills or otherwise	35

Review of Tariff Laws.

BRISTLES.

With one exception, the duties on bristles, when enumerated in the tariff acts, have uniformly been specific. The minimum rate is 1 cent per pound; the maximum 15 cents per pound. In the act of 1846, which imposed ad valorem duties exclusively, the rate was 5 per cent. In 1857, in a general reduction made without specification of articles, this rate was reduced to 4 per cent ad valorem.

In the act of 1804 bristles of swine and in the act of 1841 bristles of all kinds were admitted to free entry. Since the act of 1890 a distinction has been made between bristles, crude or not sorted, bunched, or prepared, and those advanced in condition. The former have been exempt from duty and the latter dutiable at 7½ cents per pound, except under the act of 1913, which reduced the rate to 7 cents per pound.

BRUSHES.

Duties upon brushes, on the other hand, have always been ad valorem. The rate has varied from 7½ per cent in 1789 to 40 per cent in 1864, 1890, 1897, and 1909. Thirty per cent was imposed in the acts of 1816, 1842, 1846, 1861, and 1883, and 35 per cent in 1862, 1894, and 1913. In 1883 hair pencils, and since then hair pencils and feather dusters, have been classified with brushes at the same rate of duty.

The provision for bristles and brushes in the tariff act of October 3, 1913, are as follows:

BRUSHES.

Par. 336. * * * brushes and feather dusters of all kinds, and hair pencils in quills or otherwise, 35 per cent ad valorem.

BRISTLES.

Par. 337. Bristles, sorted, bunched, or prepared, 7 cents per pound.
Par. 432, crude, not sorted, bunched, or prepared. Free.

Abstract of Treasury and Court Decisions Relating to Brushes.

BRISTLES AND OTHER MATERIALS FOR BRUSHES.

BRISTLES.

Under the system of partial revision from time to time in tariff legislation prior to 1883 hog's bristles, which were separately classified in the act of 1864, were held not included in the general clause in the act of 1872 for hair of animals. (Von Stade *v.* Arthur, 28 Fed. Cas , 1274.)

But hogs' or pigs' hair, not commercially known as bristles, was held to be free of duty as animal hair under the act of 1890. (In re Irsch, G. A. 1448, T. D. 12852.)

Bristles sorted, bunched, or prepared in any manner were first separated from bristles not so advanced in the act of 1894. Under that act bristles in bunches were held dutiable as bristles bunched and not exempt from duty as crude. The provision was declared not limited to bristles prepared for brush makers' use. (In re Lewisohn, G. A. 2993, T. D. 15969.)

Under subsequent litigation bristles tied in bunches with their butt ends lying together in preparation for brush makers' use were held to be bunched or prepared. The distinction was declared to be between absolute crudeness and advancement of one or more steps in preparation for the arts. Both sorting and bunching were adjudged unnecessary, subjection to either process being deemed sufficient. (Pushee *v.* United States, 158 Fed., 968, T. D. 28782, affirming 155 Fed., 265, which affirmed G. A. 5483, T. D. 24797.)

But uncleaned, unassorted bristles tied up in tufts or small bunches the "root" and "flag" ends mixed indiscriminately either way were exempt from duty as crude. (In re Woll, G. A. 4297, T. D. 20213.)

The provision in the act of 1909 for bristles sorted, bunched, or prepared was construed not to include pigs' bristles dyed and mounted on wire in the form of pompons or aigrettes and used for millinery purposes, which were classified as artificial or ornamental feathers by similitude. (In re Stewart Hess Co., Abstract 32296, T. D. 33409; followed in Abstract 35453, T. D. 34416.)

In recent cases, the corresponding provision in the act of 1913 was held to require such sorting, or bunching, or preparation as tends in some way toward preparing the bristles and to exclude mere bunching irrespective of length of bristles or size of bunches. (In re Cedar, Abstract 37886; followed in Abstracts 37999 and 38366.)

An importation classified by the collector as waste under this act was held to be exempt from duty as bristles, crude, not sorted or prepared. (In re Perry, Abstract 38178.)

OTHER MATERIALS.

Of other materials for brushes, bass, not manufactured or advanced in any manner except by cutting into lengths and putting into bunches for convenience of shipment, was held exempt from duty under the provision in the act of 1883 for dried fiber and stems in a crude state

not advanced in value or condition by a process of manufacture. (Appeal of P. Woll & Sons, T. D. 6593.)

A mixture of hogs' hair and bristles in equal parts, the hair not curled, was held dutiable as bristles under the act of 1883 and not free under the provision for hair of hogs curled for beds or matresses and not fit for bristles. (Appeal of P. Woll & Sons, T. D. 8667.)

But a mixture of bristles with goat hair in the proportion of 80 to 20 per cent was held dutiable under the act of 1897 as bristles, directly or by similitude. (In re Cone, Abstract 17686, T. D. 28626.)

Feather bristles, so-called, manufactured from quills, were held dutiable under the same act as unenumerated articles and not directly or by similitude as bristles. (In re Wilkens, G. A. 5861, T. D. 25821.)

Merchandise invoiced as "dachshaar imitation" and classified as an unenumerated article was held dutiable by similitude as bristles sorted, etc. (In re Knauth, Abstract 21282, T. D. 29790.)

Cocoa fiber dressed, cut into uniform lengths, and bunched ready for use in the manufacture of brushes was held dutiable under the act of 1909 as unenumerated articles partly manufactured and not exempt from duty as crude cocoa fiber. (United States *v.* Flatt, 5 Ct. Cust. Appls., 210, T. D. 34379, reversing Abstract 33808, T. D. 33789, which follows Abstract 30026, T. D. 32858, holding bass fiber cut into lengths exempt from duty as crude.)

BRUSHES.

Powder puffs have several times been the subject of decisions. Under the Revised Statutes of 1874, they were held dutiable as brushes. (Appeals of McKesson & Robbins et al., T. D. 3028 and 3114; also under the act of 1890; in re Shoemaker et al., G. A. 1731 T. D. 13351 and G. A. 2034, T. D. 13881.) But in a court case under the act of 1897 they were held not to be brushes in the tariff sense because while like brushes in use they do not resemble them in construction or material and hence are dutiable as manufactures of wool. (United States *v.* Borgfeldt, 153 Fed. 480, T. D. 28142; followed in G. A. 6611, T. D. 28222.)

Miniature brushes imported with fans, furs, jewelry, or combs, known in commerce collectively as dolls' wardrobes, were held dutiable as toys under the act of 1864. (T. D. 569.)

But diminutive paintbrushes or hair pencils in quills, flimsily constructed and designed for the amusement of children were held dutiable under the act of 1890 as "brushes" or as "hair pencils in quills" as more specific than "toys." (In re Rogge, G. A. 1053, T. D. 12239.)

Doll hairbrushes 4 inches long and not unfit for practical use have also been held dutiable as brushes rather than as toys. (In re Davis, G. A. 3777, T. D. 17843.) This decision was under the act of 1894.

Miniature feather dusters, not adapted to use by children any more than by grown persons on gala occasions, held, in default of proof of commercial designation as toys, to come within the provision for 'feather dusters of all kinds." (United States *v.* Scheuer, 4 Ct. Cust. Appls. 37, T. D. 33224, reversing Abstract 29881, T. D. 32842.)

OTHER DECISIONS UPON BRUSHES.

REVISED STATUTES.

Scratch brushes of brass were held dutiable under the provision for brushes of all kinds in the Revised Statutes and not as manufactures of brass. (Appeal of Kearney & Swartchild, T. D. 5519.)

ACT OF 1883.

Brushes in sets with hand mirrors were held dutiable as brushes where the values are separately stated; otherwise by component material of chief value. (Appeal of Vergho, Ruhling & Co., T. D. 6174.)

But toothbrush sets, consisting of brush and stand, were held dutiable as an entirety and not separately as brushes and articles manufactured in part of iron, respectively. (Appeal of Schlessinger & Mayer, T. D. 8779.)

Feather dustbrushes were held dutiable as brushes and not as feathers manufactured. (Appeal of John of Schillito Co., T. D. 7015.)

Hair pencils with wooden or iron handles used by surgeons as swabs and known commercially as throat brushes were held dutiable as brushes. (Appeal of Lehn & Fink, T. D. 8696.)

Sink brushes were held dutiable as brushes and not as brooms. (Appeals of various persons, T. D. 8999.)

ACT OF 1890.

Flesh brushes or flesh gloves of horsehair and linen, or of horsehair and wool, horsehair chief value, held dutiable as brushes and not as manufactures of animal hair. A handle was declared not essential to a brush. (In re Schieffelin, G. A. 1313, T. D. 12664.)

The rule governing the marking of hairbrushes to indicate the country of origin is whether they are usually or ordinarily marked as a class and not whether particular shipments are marked. (Dept. order, T. D. 13042.)

Quills filled with toothpowder and invoiced as toothbrushes were held dutiable as toilet preparations and not as brushes. (In re Kwong Lung Yuen, G. A. 1628, T. D. 13207.)

Penwipers made of circular pieces of woolen cloth and flannel stitched together in the center and surmounted with grouped figures of pigs and cats, the figures composed of leather and cotton velvet, respectively, were held not to be brushes, and dampeners having a wedge-shaped piece of india rubber about 2 inches long, in place of hair or bristles, and the width of the brush, fastened in the stocks thereof, used in wetting the leaves of copying books and known as copying book brushes, were held to be brushes. (In re Lippincott Co., G. A. 1946, T. D. 13752.)

Crumb trays and brushes invoiced as entireties were held separately dutiable at 40 per cent upon the value of the brushes and 35 per cent upon the value of the trays. (In re Solomon, G. A. 2477, T. D. 14755.)

Steel brush ink erasers were held dutiable as erasers and not as brushes nor as manufactures of metal. (In re Faber, G. A. 2728, T. D. 15235.)

ACT OF 1894.

Haidebrooms, consisting of bunches of stiff fiber cut into uniform lengths and bound tightly with thin wooden strips, except at the lower end, were held dutiable as brooms and not as brushes. (In re Thurnauer, G. A. 2987, T. D. 15963.)

Flute swabs or brushes, used for cleaning flutes, were held dutiable as brushes and not as part of musical instruments. (In re Foote, G. A. 3133, T. D. 16304.) (See clarinet cleaners under act of 1909, infra.)

An implement for sweeping, consisting of a wooden block 15 inches long by 3 inches wide, bound around the edges with flannel or felt, pierced on one side for a handle and having on the other side woolen strips, held to be a brush and not a broom. (In re Lewis, G. A. 3897, T. D. 18140.)

ACT OF 1897.

Dynamo brushes of metal and used for collecting and transmitting electric currents were held dutiable as articles of metal and not as brushes. (In re Michigan Electric Co., G. A. 5390 T. D. 24593.) Carbon brushes in litigation under the act of 1909 were not claimed to be dutiable as brushes of the class herein under consideration. They were held dutiable as brushes composed wholly or in chief value of carbon. (Abstract 23255, T. D. 30601.)

Dusters composed of a wooden handle to which were attached many strips of woolen cloth, commonly known as "list," were held dutiable as manufactures of wool and not as brushes, brooms, or feather dusters. (In re Melon, G. A. 5551, T. D. 24937.)

Paintbrushes packed in separate cartons in the same case with oil colors in tubes and with water colors in pans, and invoiced separately, were held not dutiable at the rate applicable to the paints, which, with the brushes, did not constitute an entirety in the condition in which they were imported, nor were they dealt in as such. The brushes were accordingly classified separately. (In re Weber, G. A. 6007, T. D. 26246, distinguishing G. A. 5984, T. D. 26209, holding boxes of tin or wood containing water-color paints, porcelain dishes, and three small brushes dutiable as entireties, because dealt in by the trade exclusively as paints.)

Buffing sticks, composed of a strip of pine upon which was fastened a piece of leather, leather of chief value, were held dutiable as manufactures of leather and not as brushes. (In re Sheldon, G. A. 6656, T. D. 28383.)

ACT OF 1909.

Round wooden sticks about 18 inches long, having at one end a whisk effect produced by small shavings of the stick turned down and bound together, were held dutiable as manufactures of wood and not as brushes or brooms. (United States *v.* Sheldon, 4 Ct. Cust. Appls. 330, T. D. 33524, affirming Abstract 30952, T. D. 33055.)

Twigs of willow, closely bound together in bunches securely fastened at one end, and of substantial strength and apparent durability, were held to be of a class of brushes known as whisk brooms and not dutiable as manufactures of wood. (United States *v.* Swedish Produce Co., 4 Ct. Cust. Appls. 331, T. D. 33525, reversing Abstracts 31031, T. D. 33088 and 31380, T. D. 33217.)

A hairbrush fitted with a compartment holding a comb, pyroxylin in chief value, was held dutiable as an article in chief value of pyroxylin under paragraph 17 and not as a brush. (In re Langsdorf, Abstract 37676.)

Clarinet cleaners, consisting of twisted wire and yarn or threads running nearly at right angles with the wire, were held dutiable as brushes. (Dept. order, T. D. 32512.) (See flute swabs under act of 1894, supra.)

ACT OF 1913.

Brass scratch brushes used for polishing gold and jewelry, were held to be within the provision for brushes of all kinds and not dutiable as wire under paragraph 114. (In re Worthington, Abstract 36472, T. D. 34763.)

A patent rotary wire brush 92 inches in length and with four rows composed of phosphor-bronze bristles 1 inch wide projecting three-fourths of an inch, set spirally in a wooden stock 4 inches in diameter, with a shaft 1½ inches in diameter projecting 12 inches, used in connection with an apparatus for cleaning the Fourdrinier wire of a paper-making machine, was held to be a brush within the meaning of paragraph 336. (In re Castle, Abstract 37023, T. D. 34984.)

Brushes for bottle-washing machines were held dutiable as brushes and not as a part of the machines with which they were imported as entireties. (In re Wirth, Abstract 38221.)

An oval rubber mat in which was set with glue, cement, or other adhesive material, bristles of the length and character of those in a hairbrush, and intended to be glued into a wooden handle, thus constituting a hairbrush, was held to fall within the provision for brushes of all kinds, directly or by similitude, and not dutiable as an unenumerated manufactured article. (In re Borgfeldt, Abstract 40862.)

Toothbrushes and bamboo baskets containing cardboard trays in which the toothbrushes were packed, the baskets used upon the counters of retailers to display the toothbrushes, were held dutiable under paragraph 175 and paragraph 336 of the act of 1913, the baskets being treated as unusual coverings. (Abstract 43037, of 1919, following G. A. 7592, T. D. 34676, of 1914, relative to showcases filled with pipes and to be subsequently refilled.)

Boot wipers consisting of an iron stand and two brushes were held dutiable as entireties at the rate applicable to the component article of chief value. (G. A. 7802, T. D. 35846, of 1915.)

Merchandise invoiced as "reversible cotton bath pads" and "cotton bath straps" and composed of cotton and loffah, classified as brushes under paragraph 336 of the act of 1913, was found not to respond to the definition of brushes, but as the component material of chief value was not shown, the protest was overruled. (Abstract 41242, of 1917.)

See also survey upon brooms.

UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPHS 1108, 1109, 1110, AND 1111 OF THE TARIFF ACT OF 1922

AND RELATED ARTICLES IN OTHER PARAGRAPHS

WOVEN FABRICS OF WOOL

PARAGRAPH 1108:
Woven fabrics, weighing not more than four ounces per square yard, wholly or in chief value of wool.

PARAGRAPH 1109:
Woven fabrics, weighing more than four ounces per square yard, wholly or in chief value of wool.

PARAGRAPH 1110:
Pile fabrics, cut or uncut, wholly or in chief value of wool, and manufactures of.

PARAGRAPH 1111:
Blankets and similar articles, including carriage and automobile robes and steamer rugs, made of blanketing, wholly or in chief value of wool.

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PREFACE

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission. These surveys deal with the commodities provided for by the tariff act in force at the time of their preparation.

When articles or commodities are covered by two or more paragraphs of the tariff act they are sometimes combined in one survey. This is done only when similarity and industrial relationship are sufficient to justify a joint treatment. When one grade of an article or commodity is dutiable and another grade is on the free list, the entire treatment is effected under the dutiable paragraph.

The commission has issued as a separate pamphlet an index to all its publications. This index lists in alphabetical order the articles or commodities treated in any commission publication.

In the preparation of this survey the commission had the services of Gardner M. Youngman, of the textile division of the commission's staff, and of others.

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WOVEN FABRICS OF WOOL

SUMMARY

Scope of report.—This report covers woven fabrics of wool, other than floor coverings. It is divided into three parts. Part 1 relates to woolens and worsteds, including cloths, dress goods, flannels, and fabrics made of mohair and alpaca, dutiable under paragraphs 1108 and 1109 of the tariff act of 1922; Part 2 treats pile fabrics of wool and hair, dutiable under paragraph 1110; and Part 3 covers wool blankets and similar articles, dutiable under paragraph 1111.

Raw materials.—The United States production of raw wool in 1925, as estimated by the United States Department of Agriculture, was 301,060,000 pounds, composed of 254,260,000 pounds of fleece wool and 46,800,000 pounds of pulled wool. Australia, the principal wool-growing country, it is estimated produced 770,000,000 pounds in 1925. Argentina in 1925 outranked the United States as the second largest wool-growing country by a very narrow margin, the clip being estimated at 313,000,000 pounds. Texas is the leading wool-producing State and is followed by Wyoming and Montana.

In the manufacture of woolen and worsted goods, including pile fabrics and blankets, the consumption of wool in the United States has been as follows: [1]

Census year	In condition purchased	Scoured equivalent	Census year	In condition purchased	Scoured equivalent
	Pounds	*Pounds*		*Pounds*	*Pounds*
1889	283,009,418	155,215,840	1909	474,755,366	290,706,970
1899	330,178,552	192,705,519	1914	434,728,075	257,448,746
1904	418,703,311	241,280,065	1919	443,461,904	263,836,462

The tendency in both the woolen and worsted branches of the industry is to use a smaller proportion of domestic and a larger proportion of foreign wools. (See Tables 2 and 6, pp. 111 and 114.) Since 1899 the worsted branch of the industry has been a much larger wool consumer than the woolen branch.

Approximately 40 per cent of the mohair used is imported; imports are mainly from South Africa and Turkey. Alpaca, vicuna, and camel's hair are entirely of foreign origin. The raw cotton and cotton yarns used by wool manufacturers are mainly of domestic origin.

[1] The wool-manufactures group of five industries embraces establishments engaged primarily in the manufacture of (1) woolen goods, (2) worsted goods, (3) wool carpets and rugs, other than rag, (4) wool or hair felt goods, and (5) wool-felt hats. The above figures relate to the wool consumed in the woolen goods and worsted goods industries only.

Domestic production.—The production of woolen and worsted woven goods, including pile fabrics and blankets, is recorded by the Bureau of the Census as follows:

Census year	Quantity		Value	Unit value	
	Square yards	Pounds		Per square yard	Per pound
1899	426,572,856	----------	$183,306,655	$0.430	--------
1904	505,821,956	----------	234,737,036	.464	--------
1909	570,743,797	----------	296,447,594	.519	--------
1914	565,462,159	----------	268,679,480	.475	--------
1919	535,937,572	329,644,797	739,279,795	1.379	$2.242
1921	493,759,555	271,250,774	550,680,681	1.115	2.030
1923	628,017,509	379,207,914	745,267,669	1.187	1.967
1925	579,788,935	334,304,707	673,569,023	1.162	2.015

On the basis of a population of 90,691,000 in 1909 and 115,378,000 in 1925, the per capita production of woven fabrics of wool decreased from 6.293 square yards in 1909 to 5.025 in 1925, or 20 per cent. Imports and exports were relatively small so that the decline in domestic consumption was in about the same ratio. This decrease may be attributed to several causes, the chief among which are the use of better grades of fabrics and the increased prices, which compel the consuming public to make its wool garments last longer. Another effect of higher prices has been to shift consumption toward the lighter weight fabrics—a tendency that has been increased by the more general use of steam-heated houses. This is particularly manifest in the substitution of worsted for woolen suitings, and in the substitution of cotton and silk for wool underwear.

The worsted branch of the industry is much larger and more important than the woolen. In 1925, there were 503 woolen mills, with 67,056 wage earners, whose products were valued at $361,524,034. In the same year, 329 worsted mills, employing 98,168 wage earners, manufactured goods valued at $596,266,304. The foregoing figures are for woven fabrics including blankets and pile fabrics, and also such products as tops, yarn, noils, and wool waste made for sale. In 1923, there were 105 woolen and 156 worsted mills whose individual output exceeded $1,000,000.

The reports of idle machinery, in the wool manufacturing industry as a whole, under the operation of the tariff act of 1922 are here presented for the month of October, 1922–1926.

Month of October	Per cent idle				
	Woolen spindles	Worsted spindles	Broad looms	Narrow looms	Carpet looms
1922	16	11	23	21	17
1923	16	16	23	19	14
1924	17	25	28	24	23
1925	21	24	29	23	29
1926	21	22	32	31	34

Imports for consumption.—The passage of the tariff act of 1897 seems to mark a distinct turning point in the wool manufacturing industry. From the Civil War up to the passage of the act of 1897, imports of woolens and worsteds were rarely less than $20,000,000 per annum, but since 1897 have seldom attained that value. The average annual imports under each of the last five tariff acts and imports in the first four full calendar years under the act of 1922 are found to compare as follows:

Woolens and worsteds—Imports for consumption—Revenue acts of 1890–1922

	Average per year of 365 days		
	Value	Duty collected	Equivalent ad valorem rate of duty [1]
Tariff act of:			*Per cent*
1890	$22,719,445	$22,588,755	99.42
1894	41,341,428	20,136,973	48.71
1897	11,855,116	11,913,649	100.49
1909	10,279,852	10,074,836	98.01
1913	13,723,523	5,363,894	39.09
1922—			
Calendar year 1923	20,127,887	14,757,798	73.32
Calendar year 1924	20,481,672	15,059,683	73.53
Calendar year 1925	22,022,680	15,593,082	70.80
Calendar year 1926	21,180,044	15,090,238	71.25

[1] The equivalent ad valorem rates of duty shown under the acts of 1890, 1897, 1909, and 1922 include compensatory as well as protective rates of duty. This should be born in mind when comparing the equivalent ad valorem rates of duty under the acts of 1894 and 1913 with those under the acts of 1890, 1897, 1909, and 1922.

Considering the increase in unit values, it is obvious that in quantity annual imports under the act of 1913, the act carrying the lowest rate of duty, averaged less than under the higher rates of any of the preceding acts. This was mainly due to the World War. Imports for consumption in the fiscal year 1914 were valued at $20,093,498, as compared with a record low value of $7,780,872 in the fiscal year 1913, but abnormal conditions arising from the war obscure the effect of the new tariff act so that it is impossible to judge whether the sudden increase in value of imports beginning January 1, 1914, would have been permanent or only temporary. The decreased rate of duty allowed the entry of goods of the cheaper grades which had previously been excluded.

Excluding cotton-warp fabrics, which are mainly linings, imports are composed of woolen and worsted cloths for men's wear and fine novelty dress goods for women's wear. The demand for these fabrics is largely due to style and reputation; they do not compete with domestic fabrics on a price basis, but are used in garments that are sold at prices considerably in excess of those obtainable for garments made of comparable American cloths.

Although imports are large in themselves, their value is only a small percentage of the value of the domestic production. In the fiscal year 1914, imports constituted by value 7.85 per cent of the domestic product; in 1919, 1 per cent; in 1921, 3.14 per cent; in 1923, 2.87 per cent; and in 1925, 3.59 per cent. Woolens and worsteds imported in 1923, 1924, 1925, and 1926 exceeded in value those of any year since 1897, and were valued at $20,127,887, $20,481,672, $22,022,680, and $21,180,044, respectively. The great bulk of the import is supplied

by the United Kingdom; France and Germany are next in importance; imports from other countries are very small.

Exports.—Excluding the war years, exports of American woven fabrics of wool have always been small. In 1921, cloths and dress goods of wool and mohair were exported to the value of $4,040,988—equivalent to three-quarters of 1 per cent of the domestic production. In 1922, they were valued at $1,676,302; in 1923, at $2,346,953, in 1924, at $1,331,775, in 1925, at $1,132,971, and in 1926, at $872,235. In recent years the largest users of American cloths and dress goods have been Canada, Cuba, and Mexico.

Foreign production.—There are no reliable figures as to the foreign production of woolen and worsted fabrics, for the reason that other countries do not follow the practice of the United States in taking a census of production. Data as to physical equipment are incomplete and for several countries available only for pre-war years. From the meager data at hand the United Kingdom seems to have the largest equipment, and the United States the second largest. France is apparently third, Germany fourth, Czechoslovakia fifth, and Italy sixth. The manufacture of woolens and worsteds in Japan and Australia is small but increasing; in all other countries it is a minor industry.

Competitive conditions.—In Great Britain, material costs are lower than in the United States. The difference in price of wool in the two countries varies at different times from a half to the whole of the duty of 31 cents a pound, on the clean content, levied on imports into this country. The British manufacturer also has an advantage in the better choice of material that is permitted by the greater number of grades into which the fleece is sorted. British operatives receive lower wages than American but the relative labor cost per unit here and abroad varies according to the type of fabric. The labor cost advantage of the foreign manufacturer is greatest in fine and fancy fabrics and it is therefore natural to find that such goods constitute the great bulk of our imports rather than staples which carry a lower percentage of labor. On fabrics such as six-quarter woolens (54 to 56 inches wide) where the weaver is restricted to one loom, the foreign manufacturer has a substantial labor advantage which can be offset only to a limited degree by the methods of production in this country. Quantity production is the rule in the United States; fewer styles are made in this country and loom changes are less frequent. The greater stability of labor, with a lower labor turnover is an advantage to the foreign manufacturer. Overhead charges such as salaries, supplies, fuel and power, are lower abroad than in the United States, and mill construction and machinery are cheaper.

The domestic manufacturer of woolens and worsteds sells in the market of the highest price level and in one which has a greater consuming capacity than any other country. Other factors which favor the American manufacturer are newer machinery, better working conditions through the arrangement of machinery to give wider alleys, the installment of modern lighting systems, and more efficient management in various ways. For some types of staple worsted the American mills are installing automatic looms and giving 6 to 12 to a weaver.[2] This innovation probably will be adopted

[2] Automatic looms will run continuously unless a filling or warp thread breaks, in which case it is automatically stopped by the operation of the filling or warp-stop motion. When the filling runs out a full bobbin is automatically inserted without assistance from the weaver.

much more slowly in Great Britain, owing to the greater conservatism of the manufacturers and the opposition of labor unions.

Prices.—In the years 1911, 1912, and 1913 the annual average price of 41 staple domestic woolens and worsteds was $1.21 per linear yard. (See Table 20, p. 136.) In 1924 these same fabrics showed an average price of $2.57 or an increase of 114 per cent. In the same period the price of domestic wools, as quoted on the Boston market, increased 121 per cent and that of foreign wools 103 per cent. (See Tables 18 and 19, p. 135.) In the woolen and worsted industries, between 1913 and 1924, earnings per hour increased 201 per cent, and full-time weekly earnings 162 per cent.

Conclusions.—Imports of woolens and worsteds entered under tariff acts carrying a compound duty [3] have been restricted almost wholly to fabrics of the finer grades. The bulk of the domestic production, on the other hand, consists of fabrics of medium quality. These goods are made into clothing and sold to the great middle class of consumers who constitute the largest market in the United States. The fabrics imported under the tariff act of 1922 do not compete on a price basis with comparable domestic cloths. Comparable fabrics of foreign and domestic manufacture, on file with the United States Tariff Commission, show the following wholesale selling prices in New York in June, 1923. The imported fabrics all paid a duty of 45 cents a pound and 50 per cent ad valorem.

Comparable domestic and foreign worsteds—Wholesale prices in the United States in June, 1923

Fabric	Domestic fabrics			British fabrics		
	Style	Weight per linear yard	Wholesale price in New York [1]	Style	Weight per linear yard	Wholesale price in New York [2]
		Ounces			*Ounces*	
Worsted serge	100A	10.7	$2.67½	100F	10.9	$3.82½
Do	101A	13.2	3.20	101F	13.7	4.52½
Do	102A	13.5	3.49	102F	12.0	4.67½
Cotton-filled gabardine	103A	13.7	3.12½	103F	12.9	4.12½
Do	104A	11.8	2.62½	104F	10.7	3.40

[1] Less 10 per cent in 30 days. [2] Less 3 per cent in 30 days.

To the average consumer, each of the domestic and the imported fabrics compared in the above table would be identical in appearance. In fact, they proved upon analysis to be approximately the same in type of wool used, yarn numbers, construction, and weight. Nevertheless, the imported fabrics sold at much higher prices simply because they were imported. In general, it can be said that imported fabrics of wool sell on the American market at higher prices than the nearest comparable domestic fabrics. The domestic cloths are sold mainly to the manufacturing clothier, while the bulk of the imported fabrics are consumed by merchant tailors.

The machinery in American woolen and worsted mills is more than sufficient to supply the domestic market and there is keen competition between domestic manufacturers. Imports of woven fabrics of wool

[3] The tariff acts of 1890, 1897, 1909, and 1922.

are due mainly to quality or reputation. The domestic mills are engaged mainly in the mass production of medium grade goods and on these they control the home market. The smaller demand for fine quality fabrics is supplied partly by American and partly by foreign mills.

An analysis of imports of woolens and worsteds entered under paragraphs 1108 and 1109 of the tariff act of 1922 shows that practically all fabrics enter under the highest value brackets; i. e., at more than 80 cents a pound. This indicates a maladjustment of value limits at the present level of prices. Three-eighths blood wool was selling in London in July, 1925, at 82 cents per pound and half-blood at 95 cents, clean content. Allowing for waste in manufacture, their cost to the manufacturer in the finished fabric was at least a fourth higher. Assuming other costs to be equal to the material cost, it would appear that few British fabrics can be produced of all wool at less than $2 per pound. The average value of woolens and worsteds entered under paragraphs 1108 and 1109 in 1924 was $1.80 and in 1925, $2.07 per pound. On the basis of the above figures it would appear that the compensatory duty on fabrics between 80 cents and $2 per pound includes a substantial amount of incidental protection, inasmuch as such fabrics must be made in part of wool substitutes, and yet they obtain the full compensatory duty of 45 cents per pound of the wool content, on the assumption that all the wool contained in them is "virgin" wool dutiable at 31 cents per pound.

The compensatory duties of the tariff act of 1922 were computed on the basis of data compiled by the Tariff Board in 1911. The greatly increased cost of materials, however, throws the present value classifications out of adjustment and does not allow cloths of medium and low grades to be entered on a parity with those made of the higher grade wools. In 1925 wool cloths, weighing more than 4 ounces a square yard, valued at not more than 60 cents per pound paid an equivalent ad valorem rate of duty of 83.77 per cent; those valued at more than 60 cents but not more than 80 cents a pound paid 104.80 per cent; and those valued at more than 80 cents a pound paid only 70.90 per cent.

PART 1

WOOLENS AND WORSTEDS

CHAPTER 1

[Text of the tariff act of 1922 providing for woolens and worsteds]

Par. 1108. Woven fabrics, weighing not more than four ounces per square yard, wholly or in chief value of wool, valued at not more than 80 cents per pound, 37 cents per pound and 50 per centum ad valorem; valued at more than 80 cents per pound, 45 cents per pound upon the wool content thereof and 50 per centum ad valorem: *Provided*, That if the warp of any of the foregoing is wholly of cotton or other vegetable fiber, the duty shall be 36 cents per pound and 50 per centum ad valorem.

Par. 1109. Woven fabrics, weighing more than four ounces per square yard, wholly or in chief value of wool, valued at not more than 60 cents per pound, 24 cents per pound and 40 per centum ad valorem; valued at more than 60 cents but not more than 80 cents per pound, 37 cents per pound and 50 per centum ad valorem; valued at more than 80 cents but not more than $1.50 per pound, 45 cents per pound upon the wool content thereof and 50 per centum ad valorem; valued at more than $1.50 per pound, 45 cents per pound upon the wool content thereof and 50 per centum ad valorem.

DISTINCTION BETWEEN WOOLENS AND WORSTEDS

The terms "woolens" and "worsteds," which are used in the industry to denote articles manufactured by separate and distinct processes, do not appear to have any special significance to the general public. In popular writings the word "woolen" is often applied indiscriminately to all fabrics made of wool. The ordinary retailer handling such fabrics would doubtless be unable to explain the essential difference between a woolen and a worsted. In chapters 2 and 3 the two fabrics are clearly distinguished and the processes of manufacture used in making each are discussed in detail, but it is pertinent to state here briefly the distinguishing characteristic of each.

The line of demarcation between woolens and worsteds is first drawn in the selection of the raw material. In the woolen trade short wools, technically known as "clothing wools," are used, whereas in the worsted trade fibers of sufficient length to enable them to be combed are necessary; hence the raw material used in the worsted branch is described as "combing wools." From this stage forward the methods employed in converting the wool into cloth are quite different, and therefore a woolen fabric differs materially in the essential characteristics from a worsted cloth.

Since the invention of the "French" as distinguished from the "Bradford" process of combing wool, the line between clothing wool and combing wool is not so sharply drawn. Shorter fibers can be used in producing worsted yarn with the French system than with the Bradford system. The same grade of wool could be used to produce a French-spun worsted yarn as a woolen yarn; the fabrics, however, would be very different.

In woolen manufacture the object is so to manipulate the fibers passing through the machinery that they become inextricably mixed in crisscross fashion, the resultant yarn containing the longest and shortest fibers in a blend uniformly worked in to present a level and uniform thread. It is in the woolen branch of the industry that wool wastes, noils, shoddy, and other wool substitutes and cotton can be carded together with wool into one yarn.

In the worsted section, the preliminary processes have for their object the elimination of the shorter fibers and the arrangement of the longer fibers in a parallel position, as distinct from the crisscross arrangement in the woolen process. A worsted yarn is composed of nothing but "virgin" wool with the short fibers or noils removed. When the wool has been passed through the worsted card it is delivered as a single strand or sliver. This card sliver is then passed through what is known as a backwashing machine, which removes all traces of dirt and grease gathered in the process of carding, and it is then ready for the combing machine. It is this machine, of which there are several types, that produces the combed sliver or "tops." In combing, the short fibers, or noils, are removed and the fibers of the tops are worked into parallel position. In this form they go forward to the spinner to be spun into yarn, usually on a frame when combed by the Bradford system or on a worsted mule when combed by the French system.

Typical woolen fabrics are cassimeres, cheviots, meltons, kerseys, homespuns, tweeds, and flannels. Typical worsteds are serges, unfinished worsteds, fancy worsted suitings, gabardines, poplins, and Poiret twills.

Imports consist mainly of fine woolens and worsteds for men's wear and novelty goods for women's wear. Linings are also imported; these are usually made with a cotton warp and with mohair or alpaca filling spun on the worsted system.

CHAPTER 2

THE DOMESTIC WOOLEN GOODS INDUSTRY

HISTORY

The history of the American woolen goods industry may be considered in four main periods. The first is the period of early growth of the factory type of industry. The preparation, spinning, and weaving of wool had been carried on as household occupations almost from the beginning of the colonial period. Its transition to a factory basis was gradual. The American woolen industry as a factory industry began with the undertaking of power carding. The Hartford Woolen Manufactory (1788) of Hartford, Conn., although perhaps not the earliest American woolen mill, is the earliest for which there is authentic description of equipment. This equipment included "two carding engines working by water"; otherwise the equipment apparently was operated by hand.

The second period was characterized by a general spread of the factory type of industry; during this time the characteristic mill was an independent, small mill operated by water power. The

principal products were plain, staple fabrics. Progress toward the development of a real woolen industry came through the work of the Scholfield brothers. Between 1794 and 1814 they established nine factories in various parts of New England and successfully introduced a number of imitations of English machines. The restrictions placed on merchant trade with Europe by the embargo of 1808 and the War of 1812 forced many New England business men to turn from shipping and trading to manufacturing. The manufacture of woolens was conspicuous among the industries undertaken and during this period the industry grew substantially. Such factories as were in operation at the close of the War of 1812–1815 found themselves unable to compete with the large quantity of British goods coming over, and the tariff of 1816, which amounted to 15 per cent on raw wool and 25 per cent on woolen goods, did not offer much encouragement to the domestic manufacturers to renew the unequal struggle between the poorly equipped and inadequately manned industry in America, on the one side, and the well equipped and skillfully manned industry of England, on the other. After the crisis of 1819 the industry revived, and between that time and 1828 it made rapid progress, with the exception of a setback following the crisis in the British industry in 1825, which led to further dumping of woolen goods into the United States. Power was applied to the operation of looms in the United States during this period. This advance in the operation of woolen looms, it is said, took place here before it did in England.

The characteristic woolen mill up to the time of the Civil War was the small plant, fully integrated. It had wool scouring, carding, spinning, weaving, dyeing, and finishing equipment, and produced plain woolens. In the early part of this period the products were mainly broadcloths, while in the latter years cassimeres and similar fabrics became more prominent. Most of these mills were located so as to make use of small water powers. New England, the Middle Atlantic States, and even the Middle West, were dotted with such mills when the Civil War began. The census of 1860 reported 1,260 woolen mills in operation, with products valued at $61,800,000.

The third period included the Civil War and the years immediately thereafter, when the war market dominated the growth of the industry. This period showed not only a great increase in the number of mills but also a wide diversification of products. The Civil War created an enormous demand for blankets and "army cloths," and to the establishment of mills to meet this demand, more than to any other one cause, was due the increase in the woolen industry in the next decade. The census of 1870 reported 2,891 woolen mills in operation, producing over $155,000,000 worth of fabrics. From that time until 1914 the census figures show a decrease each decade in the number of mills and since 1879 a decrease in the value of products, except for the year 1904, when fashion temporarily gave a new impetus to woolen manufacturing.

The fourth period was one of centralization and decline, mainly characterized by the closing of hundreds of small mills, and the general giving way of woolen fabrics to worsteds as the popular cloths for wearing apparel.

The census of 1914 reported 501 woolen mills in operation and a product valued at $103,815,905. The World War caused a demand for woolen cloths and blankets for military uses. The census of 1919

reported the first increase in the number of woolen mills in 50 years; 560 establishments were reported with a total output valued at $364,896,590. The census of 1921, however, again showed a decline in the number of plants and in value of product; 493 establishments reported an output valued at $230,945,000. This decrease in the value of products was largely due to the fact that the census of 1921 was taken during a period of severe depression. In 1923, 513 woolen mills were reported with products valued at $364,287,817, an increase over 1921 of 58 per cent. In the same period the worsted industry showed an increase of only 33 per cent. The increased activity of the woolen mills as compared with the worsted industry was not caused altogether by a temporary shift of fashion to woolen fabrics, however, but was largely due to the fact that the labor and material costs of the latter are, as a rule, lower than those on worsteds. Woolens can be manipulated and manufactured "to meet a price," whereas worsteds are more nearly standardized in construction and can not be cheapened by the admixture of reworked wool and other substitutes.

GEOGRAPHICAL DISTRIBUTION

Within recent years the number of small country woolen mills has greatly diminished and the woolen industry has become centered in a very few places. In 1923, seven States made over 75 per cent of the total product of the woolen mills of the country. Massachusetts, in 103 mills, turned out over 25 per cent of the country's woolens. Lawrence, Mass., Philadelphia, Pa., and Providence, R. I., are the principal woolen manufacturing cities.

In 1923 the 513 establishments engaged in the woolen business were located as follows: 103 in Massachusetts; 94 in Pennsylvania; 51 in Maine; 38 in Connecticut; 37 in New Hampshire; 22 in Rhode Island; 21 in New York; 17 each in Vermont and Wisconsin; 12 in Ohio; 10 each in New Jersey and Michigan; 9 each in Virginia, Indiana, and Minnesota; 7 each in Oregon, West Virginia, North Carolina, and Tennessee; 5 in Illinois; 4 in Kentucky; 3 each in Maryland, California, Iowa, and Georgia; 2 each in Utah and Washington; and 1 in Missouri.

ORGANIZATION AND EQUIPMENT

In 1889 the woolen industry was capitalized at $130,989,940, and in 1919, at $273,973,670. During this period the number of mills was reduced from 1,311 to 560. The corporate form of ownership prevails; in 1914, 77.4 per cent of the mills were owned by corporations and in 1919, 87.7 per cent.

The average number of wage earners in the woolen branch steadily decreased from 1889, when there were 76,915 employees, to 1921, when there were only 56,434. The biennial census of manufactures for 1923 reported 72,408 wage earners and in 1925, 67,056. In the period 1921–1923 the woolen employees increased 28 per cent, whereas the employees in the worsted industry increased only 15 per cent. As previously stated, the impetus given the woolen branch of the industry in 1923 was mainly caused by the excessively high prices of wool which helped the sale of woolens in preference to worsteds. In the

period 1923–1925 woolen employees decreased 7 per cent and worsted employees 20 per cent.

In 1923, 175 woolen mills, out of a total of 513, had products valued at from $100,000 to $500,000; 138 from $500,000 to $1,000,000; and 105 had products valued at over $1,000,000.

The machinery equipment of the woolen goods industry in 1919 and 1925 was as follows:

	1919	1925		1919	1925
Cards, total number	[1] 4,618	[1] 4,563	Looms, total number	29,894	31,255
Woolen [2]	4,503	4,498	Power	29,890	31,190
Worsted	20	27	Broad (64 inches or over)	21,037	24,601
Cotton	95	43	Automatic	(4)	5,143
Spindles, total	1,888,213	2,021,957	Nonautomatic	(4)	19,458
Woolen [3]	1,853,014	1,897,145	Medium (50 to 64 inches)	1,596	645
Worsted	20,371	101,580	Automatic	(4)	267
Cotton	14,828	23,232	Nonautomatic	(4)	378
Mule spinning	1,764,133	1,830,958	Narrow (under 50 inches)	7,257	5,944
Woolen [3]	1,761,433	1,827,058	Automatic	(4)	747
Worsted	2,700	3,900	Nonautomatic	(4)	5,197
Cotton			Hand	4	65
Frame spinning	48,432	97,523	Wool-combing machines	26	80
Woolen [3]	23,513	5,313	Braiding machines	2	17
Worsted	12,311	68,978	Pickers	954	849
Cotton	12,608	23,232	Garnett machines	126	101
Doubling and twisting	75,648	93,476			
Woolen	68,068	64,774			
Worsted	5,360	28,702			
Cotton	2,220				

[1] Sets of cards.
[2] Includes shoddy cards.
[3] Includes shoddy spindles.
[4] Figures not available.

MATERIALS USED

The materials used in the woolen-goods industry are wool; mohair, camel, alpaca, and vicuna hair; cattle hair; cotton; recovered wool fiber or shoddy; and noils and other by-products of wool, mohair, and camel hair.

In 1879 the woolen industry consumed 197,524,955 pounds of wool, in condition purchased. Thereafter, until 1914, each successive census showed a decline, with the one exception of 1904, when the fashions then in vogue temporarily stimulated the production of woolen fabrics. In 1914, only 78,873,319 pounds were consumed, and in 1919, 105,792,290 pounds. The decline in the amount of wool consumed in the woolen industry from 1879 to 1914 was mainly due to the demand for worsted instead of woolen fabrics. As shown in Table 2 (see Appendix, p. 111), the proportion of foreign wools used in the industry increased from 10.4 per cent in 1879 to 39.6 per cent in 1919. Prior to the act of 1922, specific duties levied on raw wools were based on the wool in the grease. Such specific duties bore more heavily on wools in which the shrinkage was greatest, and it is the heavy shrinking wools that are more generally used in the manufacture of woolens. The act of 1922 levied a duty of 31 cents per pound on the clean content, and thereby abolished the discrimination against heavy-shrinking wools.

A study of the materials used in the woolen-goods industry (see Table 3, p. 112), indicates a demand on the part of the purchasing public for higher grade woolen fabrics. From 1909 to 1919 [1] the

[1] In the biennial census figures of 1921 and 1923 the materials used are not stated and the figures for 1925 are not available.

quantity of cotton used in the manufacture of woolens decreased 7.4 per cent and cotton yarn 23.9 per cent. The use of animal hair decreased 31.2 per cent. Noils, and other by-products of wool, which are not necessarily detrimental to woolen fabrics, increased 69.6 per cent in quantity, and 275.2 per cent in value. The proportion of recovered wool fiber to the amount of wool consumed increased, however, from 23 per cent in 1909 to 30 per cent in 1919. This was partially caused, no doubt, by the large amount of shoddy used in the manufacture of woolen cloths and blankets during and immediately after the war.

METHODS OF PRODUCTION

The chief stages in the manufacture of woolen fabrics are successively as follows:

1. Wool scouring.
2. Carding.
3. Spinning.
4. Weaving.
5. Dyeing.
6. Finishing.

1. *Scouring.*—The fleece as it is clipped from the sheep's back is full of dirt, burrs, and other foreign substances, and the natural exudations from the skin of the animal. The last mentioned are mainly wool fat and yolk or suint. The scouring process frees the wool from all these impurities and leaves it clean and ready for carding. The dirt and other foreign matter are removed by mechanical washing. The suint is soluble in pure warm water, but the fat must be specially treated. The ordinary treatment is the use of detergents in the water in which the wool is scoured. The action of these is partly chemical—saponifying the fats, and partly mechanical—emulsifying them and scattering them in fine particles through the water.

Another process of getting rid of the wool fats or grease is the "naphtha solvent" process, used by one of the largest worsted mills of Lawrence, Mass. The process is described by the users as follows:

> Under this process the raw unwashed wool, full not only of grease but of dirt, is subjected in a thoroughly safe and effective way to the action of the naphtha solvent. This removes the true grease of the wool, which forms a natural soap with a base of potash. Then the application of warm—not hot—water suffices to cleanse the wool of dirt and to produce a fiber with all its impurities eliminated and its strength unimpaired, perfectly adapted for combing and manufacturing.

The naphtha solvent process is patented and not extensively used.

In the ordinary method of wool scouring the combination of mechanical and chemical treatment has been so standardized as to make possible the use of machinery throughout the process. The main work of scouring is conducted in a leviathan—a series of tanks fitted with rollers, forks, and elevators. There are also rinsers, beaters, wringers, hydroextractors, dryers, burr extractors, and finally opening, willowing, and oiling machines.

Wool scouring is not, strictly speaking, a stage in wool manufacture, for it merely puts the fibers into condition to be worked up into yarn. As a rule, it is done in this country in the same mills that manufacture the wool into yarn or cloth. The census of 1921 reports 24 specialized scouring establishments with 1,536 wage earners. Some of these scour wool on contract, whereas others purchase wool.

2. *Carding.*—The second stage common to both the woolen and worsted industries is carding. The preliminary stages leave the fibers

still tangled. The purpose of carding is to open out the fibers so that they lie loosely separated in a uniform film and to eliminate remaining impurities and fibers too short to spin. In woolen manufacture the fiber is usually carded three times; the three cards, known as a set, include the first breaker or scribbler, the second breaker or intermediate, and the finisher card. From the finisher card the material is stripped from the cylinder by two doffers carrying alternate rings of card clothing and smooth leather, the card clothing rings of one working in the line of the smooth leather rings of the other, so that the two doffers together strip the cylinder completely. These doffers in turn are stripped of their ribbons of wool which pass between broad leather aprons which work from side to side with an action like that of the hands and roll each ribbon up into a sliver. These wind up side by side on a jack spool, which then goes to the mule.

3. *Spinning.*—The main characteristics of carded woolens are softness and felting qualities. Woolen yarns, therefore, are typically soft yarns, loosely spun. Most of them are mule spun. On the mule, the drawing and twisting, which are the two main features of the spinning process, are done intermittently in a four-cycle process which is automatic. On the spinning frame, the drawing and twisting processes are continuous, and the product is a harder yarn than is spun on the mule. In woolen mills frame-spun yarn, when employed at all, is used for warp. The frame spinning machines are of various types, but in general they are simpler in construction than the mule, occupy less floor space by nearly one-half, require less skilled labor for tending, and produce more yarn per spindle. Since the frame-spun yarn, however, is not so soft as mule-spun yarn, for all soft fabrics the filling at least, and for most woolen fabrics both warp and filling, must be mule spun. The census of 1925 reported 5,313 woolen frame spindles, as compared with 1,827,058 mule spindles, in the woolen mills of the United States.

Some woolen yarns are doubled and twisted, and some are dyed before weaving. The majority of woolen cloths, however, are woven of single yarns which were spun from stock-dyed material.

4. *Weaving.*—Essentially, cloth consists of two sets of interlaced threads. One set, running lengthwise of the piece, is called warp. If the cloth is perfectly plain, one up and one down, the weaving process consists merely of running each strand of filling or weft alternately over and under each strand of warp. Mounting a loom for such a fabric is simple. The warp yarns are wound on a beam and their ends threaded alternately through two sets of heddles which when put on the loom are made to rise and fall in rotation. In the opening thus made between the raised and the lowered portions of the warp a shuttle containing the filling may be run, and the cloth is woven. But where colors, patterns, or variations in weave are introduced the process becomes more complex, and the work of mounting or dressing a loom so that it will produce a fabric according to design becomes one of the most important parts of the whole process of cloth making.

Standard cloth, which can be produced in enormous runs, is the sort of product best adapted to the type of manufacturing in which American genius has had the greatest success. Therefore, change of fashion, or any other influence which decreases the relative oppor-

unity for big runs on staples, not only increases the cost of weaving but also increases the competitive disadvantages of the standardized American method of cloth making, as compared with the more specialized methods of production of English and continental weavers.

The standard loom, in American woolen mills manufacturing piece-goods, is the 24-harness, 4 by 4 box loom, 82 to 92 inches wide. Some looms are wider, and others have as many as 32 harnesses.

5. *Dyeing.* The greater part of the domestic woolen goods is made from material dyed in the raw stock and therefore spun and woven colored. Some woolens, mainly staples, are piece dyed, but this method is not employed to the same extent as in the worsted industry.

Raw wool may be dyed either in open vessels or in special machines. The open vessels take the form of the wooden vats, some of which are lined with copper; or of copper pans provided with perforated bottoms. With open vessels, water is used to the extent of 30 to 40 times the weight of the wool. When dealing with wools of various grades of fiber which is not uncommon—the dyeing commences with boiling the batch in the coloring matter before adding the acid.

There are many types of dyeing machines in use, all based upon much the same principle, and varying only in detail. With machines the amount of water used is generally from 10 to 20 times the weight of the material that is, about 100 to 200 gallons of water for 100 pounds of wool. When dyeing in machines more attention, however, must be paid to the quality of water employed; if naturally soft water is not available, hard water may be softened by boiling it with a small quantity of oxalic acid (about 5 ounces to 100 gallons).

6. *Finishing.* All classes of fabric change in appearance, feel, and texture in the finishing processes. If, however, there is any particular style of cloth which undergoes a more pronounced change by the application of finishing routine than another, it is an all-wool fabric. Thus the fineness, softness, and firmness of texture, and lustrous surface of a fine doeskin are principally due to the chemical and mechanical treatment to which this class of cloth is subjected in finishing. In "dress-faced" cloths the warp and filling threads, so readily traceable before finishing, are completely covered with pile or nap; that is, with fiber drawn out of the yarns and spread on the surface of the fabric by means of the teazles or card wire of the napping machine. As a woolen cloth is milled or fulled before it is raised, the thready surface which characterizes it on leaving the loom disappears in the felting process, causing the fabric to resemble a felted rather than a woven production. In doeskin, for instance, the fabric in the finished condition possesses but few features in common with the same fabric in the "grey" or "loom" condition. In the finishing operations to which a woolen cloth is subjected, a degree of softness and luster is imparted. Then, again, the bare surface and the thready handle characterizing the fabric in the loom are, after finishing, no longer distinguishable, the former being replaced by a soft velvety nap and the latter by a "clothy" and elastic feel or handle.

There is more latitude for variety of effects in the finishing routine of woolen than in the finishing routine of worsted fabrics. In the latter two features are requisite, namely, a well pronounced and clear weave or color style and a bright surface; these requirements restrict finishing chiefly to one system of operations. It is quite different in

woolen manufacturing. Here the finisher is not restricted to any one definite scheme of work. Variety of surface in the fabrics must be obtained after weaving. By different treatments the cloth may be given a "clear," a "closely felted," a "pile," or a "nap" surface.

In "dress-face" fabrics, for example, such as doeskins, beavers, fine woolen cloakings, and billiard cloths, the surface is covered with a nap of short fibers laid or spread in one uniform direction, that is, lengthwise of the piece. The brightness of the face of the cloths thus treated in finishing is due, primarily, to the combing and straightening of the fibers by the points of the teazles used in raising; and, secondly, to the boiling process, which is repeated alternately with that of raising, until a nap of the requisite density and luster has been developed. On the other hand, in the ordinary classes of woolens, weave and pattern are essential characteristics, so that a finishing routine is utilized which retains the effect of the interlacing of the warp and the filling yarns, and the design produced by the method of grouping the colored threads in the warp, the weft, or both. In fine twills, such as whipcords, Venetians, and buckskins, the object is to obtain a dense, compact texture by practicing a certain degree of felting in combination with a clearly defined weave. The twill effect should be as distinct as in a worsted. By raising and cutting several times alternately this is rendered feasible. "Nap" and "curl" effects form another style of surface produced in woolen cloths by finishing methods.

This brief analysis of the "work" possible on the cloth in woolen manufacturing after it leaves the loom, makes three points evident; (1) that the thread-like structure of the fabric may, in finishing, be obliterated, as in a doeskin; (2) that the weave or plan of construction of the fabric may be made distinct and prominent, as in Venetians and whipcords; and (3) that finishing may develop specific surface characteristics, such as "naps" and "curls."

Fulling.—Milling or fulling, which ordinarily follows scouring, is the initial finishing process that produces a definite change in the woven fabric. The literal meaning of the term to "full" is to augment the cloth in density and compactness in proportion to the amount by which the piece is reduced in width and length. Felting is a quality peculiar to wool fabrics, and does not apply to cloths made of cotton, flax, silk, or other fibers. It is a property peculiar to the physical structure of wool and hair, but chiefly to the former. In a primary sense, the origin of the shrinkage which characterizes a woolen cloth when operated upon in the milling machine is the serrated surface of the wool fiber associated with the elastic, wavy quality of the wool staple; but, in a secondary sense, it is attributable to the mechanical arrangement and combination of the fibers in the construction of a woolen as distinct from a worsted thread. The method of blending and intercrossing the fibers in carding, and also the system of spinning in woolen-yarn manufacture, produce a thread structure which facilitates and expedites felting; whereas the mechanical operations peculiar to worsted-yarn manufacture produce a thread structure adapted to retard and detract from, rather than to assist and add to, the felting quality of the wool; hence a woolen piece mills or felts more satisfactorily and to a larger degree than a worsted piece.

The order of felting as performed in the milling machine is as follows: The piece is first saturated with a soapy solution and then passed between a pair of rollers, the lower roller being flanged and the upper roller—to which regulated pressure may be applied—fitting exactly between the flanges. The squeezing and crushing action on the cloth while in a twisted or rope condition, which here takes place, effects transverse shrinkage or felting in the direction of the weft. On emerging from the rollers the forward passage of the piece is interrupted, and it is cuttled in a narrow and elongated box or trough, the hinged lid of which is weighted, producing shrinkage in the direction of the warp or length of the piece.

The character of the change possible in the condition of a woolen cloth as the result of excessive fulling may be noted as one reason why the system of duties, based on the average yarn number, applicable to cotton cloths in the customs would not be practical on heavily milled woolens. An all-wool texture made of fine yarns, and set 72 inches in the loom, after milling for two days was 40 inches in width and two-thirds of its original length. The surface of the finished cloth had no resemblance to that of a woven texture, the effect of the weave having entirely disappeared, and the fabric resembled a layer of felted wool. So securely had the warp and filling threads been milled together that it was impossible, even with the greatest care, to separate them without breakages. This is obviously an unusually severe change to make in the cloth by milling, yet it serves to illustrate the fact that the greater the fulling the more compact the texture and the higher the breaking strength of the fabric; and that the more it is reduced in length and width, the more perceptibly it is increased in thickness. These, together with the quality of a soft, firm handle, are the main changes in the condition of a woolen piece developed in the fulling process.

Napping.—Whether or not it proves desirable to clear the surface of a woolen cloth of fiber in order to obtain the required finish, the piece after fulling, washing off, and tentering, is raised or napped. The modification which napping produces in the character and appearance of the cloth depends on whether the piece is napped by the damp condition or the dry condition process. The former gets up the loose fibers on the circumference of the yarns, and the latter develops, by repeated treatment, a nap of fibers spread evenly on the surface of the texture. The ordinary napping machine, on which this work is done, consists of a large and rapidly revolving cylinder in the periphery of which are fixed, at regular intervals, a number of frames closely set with teasels, the points of the latter "drafting" or passing through the fibrous surface of the cloth. Wire nappers are also used, but for a cloth on which it is desired to have a fine finish, such as a broadcloth, the old teasel gig or napper is preferable.

Damp or wet raising is adapted to the production of a full, dense nap or fibers such as form the face characteristics of all classes of dress-faced cloths. Dry raising is quite different in principle and in results. Its purpose is to disturb the loose fiber in the texture as a preparation for "shearing." Various classes of fancy woolens are dry napped. Wet napping, by spreading the filaments of the material on the surface of the cloth, prevents, to some degree, the removal of the pile in the shearing operation; this preservation of the nap and length of the fibers causes the fabric to be suitable for a more lustrous finish

and gives it a softer handle than if the piece had been napped dry. Treatment of the cloth in the dry state raises the fiber into that condition in which it is most likely to be removed by shearing. These two standard methods of napping give, therefore, opposite effects—one method concealing the crossing of the warp and weft threads; and the other, by facilitating a clear-cut finish, imparting smartness and precision to both weave and color. The difference is more apparent after the shearing operation; for whereas the only perceptible change effected in the condition of the fabric raised damp is the production of a more even pile, the dry-raised cloth undergoes a complete change. This is developed in shearing, which leaves the surface of the cloth clean and smart, so that weave effects and color combinations are both more pronounced than in the loom.

Boiling.—In woolen finishing, boiling consists in winding the piece tightly and evenly on a wooden roller and boiling in clean water for two or more hours, after which it is taken off and rewound on the roller, commencing with the opposite end of the piece in order that the cloth may be uniformly treated from end to end. This process imparts a permanent luster.

Piece-dyed worsteds are similarly lustered in the operation of "crabbing," in which the pieces are wound onto a perforated roller and "blown" with steam, allowed to set or cool, and then rewound onto a second roller and the "blowing" repeated. Improved brightness and evenness of texture are the result.

Pressing.—Firmness, brightness, and a level, even condition of the piece are acquired in this operation. Hot pressing is necessary to develop satisfactory qualities of texture; cold pressing or "plate" pressing merely implies the placing of the piece under pressure in a regularly cuttled condition. Steaming follows pressing to take off any excessive glaze developed in the operation and to improve the "feel" of the cloth.

After the piece has been pressed and steamed it is given a final examination and any imperfections are indicated and allowed for. It is then measured and rolled up for shipment.

DOMESTIC PRODUCTION OF WOOLENS

A review of the quantity of woven goods produced in the woolen mills in the last few decades is not encouraging to woolen manufacture. It is an industry that is on the decline if the per capita consumption is considered. When the production figures are studied, it will be found that the number of establishments were reduced by more than one-half from 1900 to 1923. With the possible exception of overcoatings and certain types of cloakings, practically all other standard woolens have become somewhat less popular than formerly. Cassimeres, flannels, and other woolen suitings are used in certain grades of men's clothing, but in the long run worsteds "have the call." Woolen dress goods have been largely supplanted by the more expensive and stylish worsteds. Flannels for underwear, which in former times were a considerable part of the woolen production, are now seldom seen. The production of bed blankets—essentially woolen fabrics—has not kept pace with the population, largely because of the advance made in the manufacture of serviceable all-cotton blankets, and the output of horse blankets is smaller because of the automobile.

The value of the total production of the worsted mills first exceeded that of the woolen mills in 1899 and has since continued at a higher figure. The production of woven woolen goods, including blankets but excluding upholstery goods prior to 1923, is recorded by the Bureau of the Census, and from their figures the unit values have been computed, as follows:

Domestic production of woolens, census years, 1909–1925

Census year	Quantity		Value	Unit value	
	Square yards	Pounds		Per square yard	Per pound
1909	215,673,405		$95,239,754	$0.441	
1914	228,562,987		89,683,731	.392	
1919	253,621,026	204,717,071	315,796,118	1.245	$1.542
1921	224,388,113	154,647,577	207,370,346	.924	1.340
1923	316,092,088	226,954,779	321,415,657	1.017	1.416
1925	304,683,747	201,667,313	308,124,413	1.011	1.528

The most striking fact in connection with the woolen and worsted industries brought out by the census of 1889, as compared with that of 1879, was the decline in the market value of the products of the woolen mills. The decline was the result of the change in consumption from the woolen to the worsted fabric. These goods had taken the place of the carded wool cloths, which up to 1860 constituted the entire production of men's wear goods.

The census of 1899 showed a further decline in the total value of woolen products. The decrease amounted to $15,147,819 or 11.3 per cent. There was, however, an increase in quantity of some kinds of goods produced. The decade 1889 to 1899 was a period of falling prices and, therefore, the value was not a good index of production. The production of all-wool cloths—cassimeres, flannels, etc.—for men's wear in 1889 was 25,637,998 square yards, valued at $24,076,808 an average of 93.9 cents per square yard. In 1899 the production of similar goods amounted to 34,551,226 square yards, with a value of $22,860,783, averaging 66.2 cents per square yard. The increase in yardage was nearly sufficient to overcome the decrease in the average value per square yard, and this particular group of goods showed a total decrease from 1889 to 1899 of only $1,216,025. The reduction in average cost per pound of wool consumed, which was 11.5 per cent in woolen mills, accounted to some extent for the reduced value of the production. The popularity at that time (1899) of lightweight woolen suitings for men's wear also accounted somewhat for the increased quantity of goods of that kind manufactured, and also for the greater part of the reduction in the average value per yard. Union or cotton-mixed goods for men's wear showed an increase in both quantity and value; the production in 1889 was 21,042,238 square yards, valued at $12,720,597; and in 1899, 30,767,915 square yards, valued at $13,695,830, The average value per square yard was 60.5 cents in 1889 and 44.5 in 1899. Cotton-warp fabrics, known as cassimeres, doeskins, tweeds, jeans, satinets, etc., for men's wear, decreased from 65,545,016 square yards, valued at $23,460,847 in 1889, to 50,212,178 square yards, valued at $13,897,719 in 1899.

In 1904 fashion temporarily favored woolens. The 1904 census reported an increase in both quantity and value of all-wool, union, and cotton-warp fabrics. The total value of products exceeded that of 1899 by $23,766,500. The production of all-wool woolens amounted to 133,333,339 square yards, valued at $73,196,066; union goods to 63,197,407 square yards, valued at $26,288,407; and cotton-warp woolens to 98,526,697 square yards, valued at $25,905,689.

The census of 1909 reported the total value of products of the woolen mills as $107,118,858, a decrease of $35,077,800 since 1904. All-wool, cotton-warp, and union woolens amounted to 215,673,405 square yards, valued at $95,239,754, a decrease in quantity of 79,384,038 square yards subsequent to the prior census. This decrease occurred in the production of both all-wool and cotton-warp fabrics. The quantity of union goods produced exceeded that of the prior census by 27,153,799 square yards.

The quantity of woolens produced from 1914 to 1921 remained fairly constant; 228,562,987 square yards in 1914; 253,621,026 in 1919; and 224,388,113 in 1921. The public demand for better grade fabrics, in recent years, is shown by the fact that all-wool woolens increased from 74,220,650 square yards in 1914 to 148,015,611 in 1925. The average weight of woven woolen goods decreased from 12.9 ounces per square yard in 1919 to 10.6 in 1925.

The census figures for 1923 show that the production of woven woolens was the largest ever recorded. The value exceeded that of 1919 by $5,619,539 and the quantity by 62,471,062 square yards. All-wool, union, and cotton-warp woolens showed an increase in both quantity and value. Compared with the census figures for 1921, all-wool flannels for underwear increased 60.7 per cent in value and 53.9 per cent in the number of square yards. Cotton-mixed flannels for underwear also showed an increase over the production of 1921, while flannel shirtings showed a decline. In blanket manufacture, the greatest increase over 1921 was shown by the cotton-mixed variety, which increased 105 per cent in value, as compared with 43 per cent for the all-wool and 1.1 per cent for the cotton-warp types.

The census of 1925 recorded the total value of products of 503 woolen mills as $361,524,034, a decline of 0.76 per cent since 1923. Woven goods produced amounted to 304,683,747 square yards, valued at $308,124,413. Compared with the census figures for 1923, all-wool woolens, wool and cotton mixed, cotton warp, and flannels showed a decline. The production of satinets and linseys increased from 6,107,064 square yards, valued at $2,278,151 in 1923 to 11,877,015 square yards, valued at $4,244,228 in 1925.

CHAPTER 3

THE DOMESTIC WORSTED GOODS INDUSTRY

HISTORY

The worsted industry did not develop on a factory basis until after the various combing machines invented in the middle of the nineteenth century had been made commercially available. The most important of these improved combs were the Noble comb, the

type most commonly used in England and in the United States; the Lister or nip comb, best suited to long wools; the Holden or square motion comb; and the Heilmann comb, used on the European Continent more than elsewhere. Before the development of these machines worsted yarns, even when made for factory weaving, had been combed by hand. The combing machines which are now in use were all invented within 11 years, 1842 to 1853. After these combs were introduced the worsted industry grew with great rapidity.

The chief characteristics of the American worsted industry as it is at present constituted are: (1) The relatively large size of plants; (2) the high degree of specialization in process; and (3) the high degree of centralization in a few States and, more specifically, in Lawrence, Mass.; Providence, R. I.; and Philadelphia, Pa. In these three cities the greater part of the country's worsteds are produced.

GEOGRAPHICAL DISTRIBUTION

Massachusetts, Rhode Island, New Jersey, and Pennsylvania are the main producers of worsted goods. In 1919, 862 worsted combs were located in Massachusetts, 385 in Rhode Island, 368 in New Jersey, 343 in Pennsylvania, and 239 in all other States. In 1923, Massachusetts produced 37 per cent in value of the country's worsteds, Rhode Island 21 per cent, Pennsylvania 17 per cent, New Jersey 12 per cent, and all other States 13 per cent.

Of the 338 establishments reported for the worsted-goods industry in 1923, 103 were located in Pennsylvania; 83 in Massachusetts; 69 in Rhode Island; 23 in New Jersey; 16 in New York; 12 in Connecticut; 9 in Maine; 4 in New Hampshire; 4 in Ohio; 3 in Wisconsin, and 1 each in Delaware, Georgia, Illinois, Kentucky, Louisiana, Maryland, Oregon, South Carolina, Texas, Vermont, Virginia, and West Virginia.

ORGANIZATION AND EQUIPMENT

In 1859, there were only three worsted establishments in the United States, capitalized at $3,230,000; in 1919 there were 292 establishments, capitalized at $557,721,000. During this period of 60 years the average number of wage earners grew from 2,378 to 103,830, and the value of products from $3,701,000 to $700,537,000. In 1923, 338 establishments were reported with 122,144 wage earners, and total products valued at $698,270,621. In 1913, 87.8 per cent, and in 1919, 92.8 per cent, of the domestic worsted mills were owned by corporations. In 1923, 156 worsted mills reported individual outputs valued at more than $1,000,000; these 156 establishments produced 46.1 per cent of the total value of products for the entire industry.

The machinery equipment of the worsted goods industry in 1919 and 1925 was as follows:

	1919	1925
Cards, total number	2,457	2,863
Woolen	333	289
Worsted	2,041	2,262
Cotton	83	312
Spindles, total	3,087,916	3,817,174
Woolen	179,536	171,003
Worsted	2,883,132	3,516,388
Cotton	25,248	129,788
Mule spinning	837,312	963,977
Woolen	166,420	154,989
Worsted	670,892	808,988
Cotton		
Frame spinning	1,555,135	2,010,882
Woolen		10,334
Worsted	1,531,551	1,876,048
Cotton	23,584	124,500
Doubling and twisting	695,469	842,315
Woolen	13,116	5,680
Worsted	680,689	831,347
Cotton	1,664	5,288
Looms, total number	45,835	48,251
Power	45,818	48,240
Broad (64 inches or over)	29,281	31,710
Automatic	(1)	11,860
Nonautomatic	(1)	19,850
Medium (50 to 64 inches)	6,422	4,694
Automatic	(1)	3,029
Nonautomatic	(1)	1,665
Narrow (under 50 inches)	10,115	11,836
Automatic	(1)	7,227
Nonautomatic	(1)	4,609
Hand	17	11
Wool-combing machines	2,171	2,557
American manufacture	647	734
Foreign manufacture	1,524	1,823
Braiding machines	250	
Pickers	103	94
Garnett machines	29	21

[1] Figures not available.

The census of 1925 was the first to give the number of automatic looms in the wool manufacturing industry. The following table shows the total number of power looms, and the percentage of those that were automatic in the woolen and worsted industries.

	Power looms	Automatic (per cent)
Woolen-goods industry:		
Total power looms	31,190	20
Broad (64 inches or over)	24,601	21
Medium (50 to 64 inches)	645	41
Narrow (under 50 inches)	5,944	13
Worsted-goods industry:		
Total power looms	48,240	46
Broad (64 inches or over)	31,710	37
Medium (50 to 64 inches)	4,694	65
Narrow (under 50 inches)	11,836	61
Grand total power looms (woolen and worsted)	79,430	36

In 1925, 71 per cent of the worsted combs were of foreign origin. The prevailing width of the worsted cards is 60 inches; these cards are predominantly of domestic manufacture. Very few looms in either the woolen or worsted mills are of foreign origin. Manufacturers in this country consider the looms built in the United States for all varieties of wool fabrics superior to those of any other

nation. Imports of wool-working machinery consist mainly of worsted mules and cap spindles from England, and gill boxes, slubbers, intermediates, and rovers from France.

MATERIALS USED

The raw materials of the worsted industry are wool and other animal fibers and, in semimanufactured form, tops and yarns. The cotton, rags, recovered wool fiber, and waste, recorded by the census as being used in worsted mills, are all used in establishments wherein the products of chief value are worsteds but in which woolen fabrics are also manufactured. All-wool worsteds are necessarily made of "virgin" wool yarns from which the short fibers called "noils" have been removed in the process of combing. Since the invention of the "French" as distinguished from the Bradford system of combing wool, shorter fibers have been used in the manufacture of worsted yarns; however, no system to date has been perfected wherein reworked wool of even the longest staple can be mixed with the raw wool in worsted yarn manufacture. Therefore, any future legislation tending to disclose the amount of wool substitutes used in the manufacture of wool cloths would affect the woolen branch of the industry only. Many fabrics are produced which are a combination of woolen and worsted yarns, or cotton yarns and worsted yarns, but the worsted yarn can be relied upon to contain nothing but "virgin" wool.

Since the census of 1899, the amount of wool consumed in the worsted industry has exceeded that of the woolen branch and the tendency shown in each successive census is for a greater proportion of foreign and a smaller proportion of domestic wool to be used. In 1879, 38.1 per cent of the wool was foreign and in 1919, 46.1 per cent. The largest amount used in any census year was in 1909, when a total of 387,717,415 pounds, in condition purchased, was reached; in 1919, only 337,669,614 pounds were consumed.

The quantity of mohair, camel, alpaca, and vicuna hair used in the worsted industry rose from 6,515,367 pounds in 1909 to 12,474,340 pounds in 1919—an increase of 91.5 per cent. During these 10 years the quantity of cotton used decreased 35 per cent and cotton yarns 29 per cent. The smaller quantity of cotton yarns used in worsted manufacture is reflected in the decreased quantity of cotton-warp goods woven in worsted mills; in 1909, 119,994,875 square yards were produced, and in 1919, 83,826,249 square yards; a decrease in the decade of 23.2 per cent. Tops purchased increased from 20,269,307 pounds in 1909 to 25,732,481 pounds in 1919, or 27 per cent; the quantity of woolen yarns purchased increased 943.6 per cent, but the quantity of worsted yarns purchased decreased 26.8 per cent. In 1909, 211,577 pounds, and in 1919, 331,572 pounds of silk and spun silk yarns were purchased. These yarns are used for decorative purposes in fancy worsteds. The raw materials used in the industry subsequent to the census of 1919 are not recorded.

METHODS OF PRODUCTION

The manufacture of worsteds differs from that of woolens in the introduction of certain processes designed to comb the fibers and lay them straight in the yarn. Woolen fabrics are made to be fulled,

and the aim in all the processes of their manufacture is to produce an open, soft cloth with high felting properties. Worsteds, on the other hand, are fulled only slightly. Their strength and wearing properties depend upon the way in which the fibers are laid in the yarn and not upon the fulling process after the cloth is woven. In finishing worsteds the yarns are clearly defined and not felted. The latter statement is true in general, but must not be interpreted too literally. It is strictly true of the coarse worsteds which are made from long straight wools, with no curly fiber, and with the weave of the cloth clearly outlined. Some of the best worsteds, however, are made of fine wools, with some curly fibers among them, and these not infrequently have high felting properties.

Most fancy woolens and many worsted suitings are more or less fulled to give them strength and body, but the shrinking and felting are comparatively slight. The napping of such cloths is not so severe an operation as in the woolen "faced" cloths. It is carried out in a different way and with a different object. Worsteds are, as a rule, only slightly raised, since their close, firm texture would not allow the rather drastic application of the teasel which some woolens undergo, and the napping of both woolens and worsteds of this type is carried out while the fabric is dry. Its aim is to brush up loose fibers, which are subsequently cut off short by the shearing machine, the net result of the two processes being to show up rather than to conceal the weave.

The chief stages in the manufacture of worsted are successively as follows:

1. Scouring.
2. Carding or preparing.
3. Backwashing.
4. Gilling.
5. Combing.
6. Drawing.
7. Spinning.
8. Weaving.
9. Dyeing.
10. Finishing.

It will be observed that these processes are the same as those used in the manufacture of woolens with the addition of backwashing, gilling, combing, and drawing, which are introduced between carding or preparing and spinning.

1. *Scouring.*—The process of scouring wool intended to be used in worsted yarn is similar in principle and results to that employed on wool for use in the manufacture of woolen yarn.

2. *Carding or preparing.*—The worsted card differs in construction and in combination of parts from a woolen card, but the operation is similar in principle in the two types of machine. The object is to separate, as in woolen carding, the fibers of the wool and to rearrange them, and at the same time to remove burrs and other foreign matter and to deliver the material in one continuous ribbon or sliver of uniform thickness, weight, and fibrous density.

One large card, a combined breaker and finisher, is used. The sliver which comes from the worsted card is not so completely carded as that from the woolen card, but it is not necessary that it should be because of the additional treatment it is to undergo.

While most wools used in the manufacture of worsted yarns are carded, there are some long-stapled varieties in the manufacture of which carding gives place to preparing. Generally, long wools, 7 to 8 inches in length and upward, are prepared for the comb by the preparer; wools below these lengths are prepared for the comb by the carder.

The preparing machine breaks up the naturally formed clusters of material, lays the fibers parallel, and arranges them in the form of a continuous strand. To avoid breakage and to obtain the maximum degree of straightening of the fiber, the process of preparing is usually divided into five or six operations.

3. *Backwashing.*—After carding, the material is ready for those processes which pertain strictly to worsted yarn manufacture, namely, backwashing, combing, drawing, roving, and spinning on the cap frame or flyer frame. Backwashing is the first of these processes. The material, as it leaves the card, may be somewhat discolored by the oil applied to facilitate its passage through the machine, and it may contain some dirty matter. It is necessary before combing to remove such impurities and thoroughly cleanse the material. This is done in the backwashing machine, to which is attached a double-screw gill balling head. The machine consists of a couple of cleansing bowls, each of which contains a pair of immersing rollers and a pair of squeezing rollers, a series of drying cylinders, and the gilling and balling apparatus. A washing or scouring soap, without any excess of alkali, is used in the first bowl, the standard temperature of the scour being 100° to 110° F. After using, it is run to waste, and the solution from the second is conveyed into the first bowl and renewed as required with the scouring ingredients employed. If the sliver should be tinged yellow, a "blueing" or "tinting" solution to whiten the wool is added in the second bowl, which is chiefly utilized for rinsing. From the last drying roller the backwashed material is conveyed to the screw-gill balling head and delivered as two balls of sliver.

4. *Gilling.*—The object of the process is to straighten the fibers, draw out and level the carding, and prepare the material for the combing machine. In the treatment of long wools, it is this process which effects the correct arrangement of the fibers, without other preparatory mechanical operations, in a suitable condition for the comb.

A set of preparing boxes for ordinary combing wools comprises five or six machines similar in construction and also in principle of operation. The sheet or "lap" of fibers resulting from the first gilling is passed through the second box and again delivered in lap form. In the third box a change is made in the mode of delivery. The gilled material is passed through an oval plate and then between a pair of smooth pressure rollers to be delivered in the sliver form into cans. Some six such cans are placed behind the fourth box, and the six slivers drawn out to approximately the thickness of one of the series. A like number is similarly redrafted and reduced in the fifth box and the process repeated in the next or sixth operation. This frequent combination and drawing out of the material is necessary to produce a level and uniform sliver of straightened fibers of suitable composition for the process of combing.

For short-staple wools, such as fine merinos and crossbreds, gilling is practiced both before and after combing. Attached to the backwasher is a gill box capable of delivering the slivers either in four balls or into four cans, and made with two sets of faller screws. Following this leveling treatment the balls of backwashed slivers are passed through a pair of gill boxes, known as preparers or as intermediates because they are used between backwashing and combing.

One such gill box, with one set of screws, is equivalent in output to two Noble combs, each of which, on fine wool, has a productive capacity of 375 to 420 pounds of combed top per day of 10 hours. If the preparers are mounted with two sets of screws and fallers they are capable of supplying material for four combs.

5. *Combing.*—In the combing, drawing, and spinning of worsted yarns there are two separate methods or systems—the English or Bradford system and the French system. The former is employed more commonly in the worsted mills of the United States and England; the latter is the one generally used in continental Europe. In recent years, however, the French system has been introduced into this country, and, although it is to be found in only a comparatively few mills, it is there employed on a large scale. The machinery used in the manufacture of worsted yarns by the French system is practically all foreign.

The purpose of combing is to take out all the short fibers or "noils" and to leave the long fibers all laid parallel and straight in a continuous sliver, perhaps three-quarters of an inch thick, known as "tops." The specialized, separate, top industry is the rule rather than the exception in England and on the Continent. In the United States, however, most worsted mills were established with their own combing departments and still retain them.

6. *Drawing.*—The principle of the drawing operation is that of combining several slivers and drafting them to such a degree as to produce a thick, soft thread which, when twisted, will form a yarn capable of withstanding the tension and friction of the weaving process. Two or more slivers are successively united and drawn to a length equal to the sum of their combined lengths, that is to say, if six strands were put together and elongated into one, a yard of the combined sliver would be attenuated to the length of the six and reduced to a size corresponding to one of the six. This system of equalizing and leveling rectifies any unevenness and further adjusts and straightens the fibers. Six or nine successive machines are employed, all built on a similar principle. Each machine has two pairs of rollers, revolving at different speeds, one pair receiving the slivers and the other delivering them. Draft or attenuation is, in every machine, effected on this sytem. The "ratch" or draft is varied according to the average length of the fibers of the wool, a reduction being made as the material passes from one frame to another, the increase in length of the sliver in each box being in the same ratio as the circumferential speeds of the two pairs of rollers. The Bradford and French systems differ a good deal in the details of these processes. For example, in the Bradford system a twist is imparted to the rovings in the winding, while in the French system this is not done.

Roving may be defined as a combination of drawing and twisting, with an excess of drawing, while spinning is a combination of the same processes with an excess of twisting. It is the last operation through which the slubbing passes before spinning. In the roving box two of the thick slubbings from the preceding machine are combined and reduced in size but increased in length, the operation being the same, with the exception of the twist inserted, as in the drawing machines.

7. *Spinning.*—Woolen yarns, with few exceptions, are produc on the mule, but for worsted yarns there may be used the cap frame, the flyer frame, the ring frame, or the worsted mule, the selection of the type of spinning machine to be used depending mainly on the quality of the wool and the type of yarn to be produced.

In its essentials, ordinary worsted spinning differs but little from the last of the drawing processes. In such spinning there is, however, no doubling and there is a great deal more twisting than at any previous stage. The oldest type of spinning frame, the "flyer" frame, closely resembles the roving machine. Frames are usually made double; that is, they have rows of spindles on each side. The rovings, wound on bobbins, are placed on pegs on the upper part of the frame. Each end passes, as it has so often passed before, between two pairs of drawing rollers, revolving at different speeds. Between the drawing rollers are two pairs of small "carrying" rollers, whose function is merely to conduct the roving to the front rollers. The surfaces of the carriers move rather faster than those of the back rollers. The roving is twisted into yarn between the "nip" of the front rollers and the arm of the flyer, to which it goes direct from the rollers, by the rapid revolution of the flyer; and the spun yarn is wound onto a bobbin running freely on the spindle. The bobbin is made to rise and fall automatically in order to secure accurate winding. Very great speed is impossible in flyer spinning; for, as the flyer is fixed to the spindle some distance from any point where the latter can be supported, high speeds lead to excessive vibration and so are undesirable. The two other types of frames regularly used in worsted spinning are free from this objection. These are the cap and the ring frames. So far as the drawing work is concerned, these frames are identical with that just described; it is the spinning and winding mechanism that differs.

The cap spindle, unlike the flyer spindle, is fixed—a mere peg of metal. The cap, from which the machine takes its name, is also fixed; this is a steel tube, closed at the top, where it receives the head of the spindle, over which it fits. The spindle, just above the point where it is fastened to the rail that carries it, passes through a "whorl," or small, solid horizontal wheel with a grooved edge on which a driving belt works; so that it is the whorl that rotates, not the spindle. To the whorl is attached a brass tube that fits the spindle closely; and the bobbin rests on the whorl. Thus, the bobbin is driven round, not dragged round; and twist is imparted to the yarn between the rollers and the point where it is being wound on the bobbin. A "lifter plate," causing the bobbin to rise and fall, insures accurate winding, just as in flyer spinning. In cap spinning, there is a perpetual rubbing of the yarn against the edge of the cap, around which it is traveling at high speed. Consequently this type of spindle is best adapted to very fine yarns of high-class wool, which can stand the friction and which are required to have a smooth surface. As there is comparatively little friction or vibration in the spindle mechanism itself, cap frames can be driven considerably faster than flyers.

In ring spinning, the spindle rotates and the bobbin with it, for the latter is attached to a plate on the former. The revolving spindle is supported in a long metal "sleeve" and can be driven rapidly with little vibration. On the ring runs the "traveler," a small steel hoop

with a gap that can be squeezed over the flange of the ring; it will then run freely round and round and can only be pulled off with difficulty. The thread passes through the traveler to the bobbin, the motion of which drags the traveler round. Twist is inserted in the roving between the front rollers and the traveler, just as in the flyer frame it is put in between the front rollers and the flyer arm. But whereas on the flyer frame the bobbin is dragged, in the ring frame the bobbin does the dragging. In ring spinning, the accurate winding of the yarn on the bobbin is due, not to any movement in the spindle, but to the rise and fall of the whole ring plate, with its rings and travelers.

The mule, when used for worsted yarn, has on the stationary frame two pairs of fixed rollers between which the sliver is drawn out. The front pair pay out the drawn sliver all the time that the carriage moves, while the spindles are imparting the necessary twist. Mule-spun worsted yarns, though by no means unknown in this country, are not so common here as on the Continent; they are most common in the hosiery yarn trade. It is generally admitted that the combination of the French drawing with mule spinning produces a yarn whose softness and fullness can not easily be attained by any other method; for in mule spinning the friction and drag on the yarn, incidental to flyer, cap, and ring spinning, are very largely avoided.

8. *Weaving.*—The operations through which warp yarns pass between the spinning machine and the loom are the same in principle in the manufacture of practically all classes of textile fabrics, and comprise warping, sizing, and drawing-in.

Weaving, whether considered from an artistic or a mechanical standpoint, is one of the most important operations of textile manufacture. Other operations are secondary, having for their object the preparation of the raw material for the loom, or the improvement in appearance, handle, and surface of the woven product. On the process of weaving depends, to a very considerable extent, the success of manufacture in general. The employment of good, sound, even yarn can not possibly result in satisfactory fabrics if the motions of the loom are in any way defective.

The power loom is constructed to form the shed in the warp according to the required pattern or design; to propel the shuttles in consecutive order across the piece; and to beat the picks of filling into close contact with each other so as to produce a woven fabric, and finally wind it on to the piece beam. The loom usually possesses other minor motions for facilitating quick weaving, such as the arrangements whereby it is brought to a stop without interference on the part of the weaver should the warp or filling yarn be broken, the filling run out, or the shuttle not reach its proper destination.

The weaving of worsted fabrics is similar in all respects to the weaving of woolens. As a rule, the looms used in the worsted mills are somewhat lighter in weight and of less reed space than those used in the weaving of woolens. The standard reed space of a six-quarter worsted loom is 72 inches, whereas for a woolen loom it is generally 82 to 110 inches. Using nonautomatics, two looms to the weaver is the rule for staple worsteds, and not infrequently the practice for fancy worsteds, whereas one loom to the weaver is the rule for woolens.

The automatic bobbin-changing looms are built to produce a wide variety of fabrics with the use of two, four, or six colors or sizes of

filling. This loom will run continuously unless a filling or warp thread breaks, in which event it is automatically stopped by the operation of the filling or warp stop motion. It is better adapted to the weaving of worsteds than of woolens, and is particularly suitable for fabrics made with a cotton warp and a worsted filling. On mixed fabrics of this sort, the cost of weaving is considerably reduced, since one weaver may run six or even more looms. However, on fabrics in which the design calls for a "pick and pick" filling, or a single fancy pick, this loom can not be used, as it is always constructed with a single shuttle box on one end which necessitates the insertion of two consecutive picks from each bobbin.

9. *Dyeing.*—Worsted fabrics are either piece-dyed, cross-dyed, or yarn-dyed. Piece-dyed fabrics are woven with the yarns in their gray or natural state. They are then cleaned and dyed in the piece to such colors as are required.

Cross-dyed fabrics are woven with black or colored cotton warps and with worsted filling in the natural state. After being woven, they are dyed in the piece. The cotton does not take the wool dye, but retains its original color. Mohair, alpaca, and what are known as luster fabrics are generally subjected to this process for the reason that it does not impair the natural brilliancy of the goods as does the cotton-dye bath after the fabric is woven.

Worsted mixtures are slub-dyed. The wool is carded and combed in the natural state and the slubbing dyed and mixed with white or a color before being spun into yarn.

Yarn-dyed fabrics are woven from dyed yarns. Slub-dyed yarns may be distinguished from yarn-dyed yarns by the number of colors in the strand; in the former each individual strand is of two or more colors, whereas in the latter yarn each strand is but one. Dyed yarns are particularly suitable for shepherd checks, fancy checks, and plaids.

10. *Finishing.*—The first finishing process in all fabrics is the examination of the piece with a view to finding imperfections and removing them by hand. Mispicks and threads out in the warp are indicated and sewed in; knots are carefully drawn through to the back of the fabric and clipped off. It is this burling and mending that saves many pieces from being "seconds." The trade is always critical, particularly in times of depression, and will often attempt to return goods only slightly imperfect. In all worsted mills, particular attention is therefore given to the burling and mending departments.

A worsted texture is the same, to a very considerable degree, in appearance and handle after it has been scoured, sheared, and pressed, as it was when it comes from the loom. The chief noticeable alteration that finish effects is a desirable improvement in softness and luster. The point to be specially noted is that while a worsted fabric is only perceptibly changed in thickness or strength during the finishing operations, a woolen fabric, more particularly when milled, increases both in density and fullness of handle, these qualities being obtained more or less in the fulling machine.

Worsted finishing is applied to piece-dyed and to "fancy" fabrics. The routine is similar in the two, but different in that the piece-dyed worsted undergoes finishing treatment both before and after dyeing, and crabbing is more severe than in fancy cloths. Some variation

of routine is also made to correspond with structure and texture. Fulling, for example, may improve the handle of the pieces, particularly if the goods are finely set in the warp and a woolen or single worsted filling yarn has been used. But, bearing in mind that the design must be distinctly developed, either through diversity of weave or coloring, and that the handle and wearing quality of the fabric must be improved, the finishing routine for worsted is not variable to any great degree; it demands only attention to details, even to minutiæ. Briefly, this may be summarized as comprising the operations of burling and mending, scouring, hydroextracting, tentering, crabbing, brushing, shearing, pressing, and steaming.

It will be understood that the routine in any system of finishing is modified to develop the quality and textural characteristics required.

PRODUCTION AND CONSUMPTION

The value of all products of the worsted mills of the United States from 1889 to 1925 is recorded by the Bureau of the Census as follows:

Year	Value	Year	Value
1889	$79,194,652	1919	$700,537,482
1899	120,314,344	1921	524,638,921
1904	165,745,052	1923	698,270,621
1909	312,624,663	1925	596,266,304
1914	275,668,474		

The foregoing figures relate to the total value of output, and as the unit values were different in different years they can not be taken as an indication of the changes in volume of production. It seems clear, however, that there was a steady growth between 1889 and 1909. The total values were somewhat lower in 1914, with wool on the free list; increased to record height in 1919 under the stimulus of the war, although wool was still on the free list; declined sharply in 1921, a year of deflation; and in 1923, with wool dutiable, almost attained the same height as in 1919.

Prior to 1925 the greatest volume of production was actually attained in 1909 and the successive censuses of 1914, 1919, and 1921 showed a trend downward; in 1923 there was a recovery of part of the ground lost. Omitting figures for partially manufactured articles and for by-products and wastes, the production of woven goods by the worsted industry has been recorded by the Bureau of the Census as follows:

Domestic production, of worsteds, 1909–1925

Census year	Square yards	Pounds	Value	Unit value	
				Per square yard	Per pound
1909	355,070,392	----------	$201,207,840	$0.567	----------
1914	336,899,172	----------	178,995,749	.531	----------
1919	282,316,546	124,927,726	423,483,677	1.500	$3.390
1921	269,371,442	116,576,197	343,310,335	1.274	2.945
1923	311,925,421	152,253,135	423,852,012	1.359	2.784
1925	275,105,188	132,637,394	365,444,610	1.328	2.755

The per capita production, which is not materially different from the per capita consumption, of domestic worsteds was 3.92 square yards in 1909 and 2.38 in 1925, or a decrease of 39 per cent. This decrease is due to many causes, but mainly to the increase in costs and prices which has compelled the average consumer to make his wool garments last longer. The following table gives index numbers of retail prices in the United States of domestic wool, worsted weaving yarn, woolen and worsted suitings, and spring and fall suits and overcoats, on the basis of 100 taken as the average of prices in the years 1911, 1912, and 1913.

Index numbers, 1911–1925

[Source: Fairchild Publishing Co.]

Year	Domestic wool	Worsted weaving yarn	Woolen and worsted suitings	Suits		Overcoats
				Spring	Fall	
1911, 1912, 1913	100	100	100	100	100	100
1920	231	336	237	278	302	285
1921	117	176	242	214	218	199
1922	180	203	194	202	193	181
1923	213	233	208	203	214	202
1924	221	225	227	223	224	205
1925	[1] 221	[1] 224	[2] 219	216	222	211

[1] April, 1925.

[2] Spring, 1925, opening.

The postwar prices of wool fabrics have been relatively higher on worsteds than on woolens. Between 1921 and 1925 the production of woolens increased 80,295,634 square yards, whereas worsteds increased only 5,733,746 square yards. With the exception of an increased demand for woolens for use in sport clothing, there has been no noticeable trend in the fashions toward woolens in either men's or women's garments. Clothes made of worsted fabrics are ordinarily sold at higher prices than those made of woolens. When some ready-made worsted suits are retailed as high as $85, it is not surprising that the consumption of worsted cloths has declined.

Prior to 1880 the manufacture of worsteds in this country was confined largely to the making of lightweight goods for women's wear, commonly grouped under the name of "stuffs" or dress goods. An exception to this rule was the manufacture of coarse worsted yarns for use in the carpet industry. Men's-wear worsteds were first manufactured about 1870, and they had so increased in importance by 1890 that the value was nearly double the value of the products of the dress goods mills.

The principal fabrics made in worsted mills are all-wool worsted suitings, overcoatings, and dress goods. Production has remained fairly constant in the last two decades. These fabrics show a decrease from 1909 to 1923 of only 16,412,058 square yards, whereas cotton-warp worsteds show a decrease for the same period of 50,551,348 square yards. This tendency toward fabrics of better grade is manifest in both the woolen and worsted industries, and the superior wearing quality of all-wool cloths is one reason why the per capita consumption of woven fabrics of wool has been less in recent years.

For some years the demand for clothing has been, from the point of view of the trade, anything but satisfactory. Many persons

connected with the industry attribute this directly to the high prices which have existed for clothing. The average of cloth prices for the fall of 1925 is about 141 per cent higher than the average in 1911, 1912, and 1913. This represents a much greater increase over pre-war prices than obtains in most other commodities. The consumption of woolen and worsted goods probably will not show great improvement until prices have dropped sufficiently to stimulate demand.

CHAPTER 4

THE WOOLEN AND WORSTED INDUSTRIES ABROAD

INTERNATIONAL TRADE

For some 10 years or more before 1914 wool manufacturing was expanding. The growth took place both in the countries where the industry was most advanced and in countries where the existence of a domestic wool supply or other favoring influences was stimulating a local manufacture theretofore little developed. Great Britain and the United States were becoming increasingly important manufacturers of wool; Germany and Belgium were rising factors in the trade, and a vigorous Italian industry was beginning to attract international attention; in Japan and Australia new industries were started. In all these countries growth in population was a leading factor in the development of wool manufacture. France alone of the greater powers was lagging behind; among other factors, an almost stationary population of frugal habit hindered expansion in the woolen and worsted industry.

Outside of the larger countries of Europe and the United States small industries were springing up, largely for the weaving of the coarse wool cloths and blankets used by the peasantry. Home-grown wool, which long ago ceased to be the main dependence of the larger wool-manufacturing countries, furnished the wool used by many of these producers. Frequently, these industries began as hand spinning and weaving establishments.

By 1914 the leading wool-consuming countries were more completely equipped for worsted than for woolen manufacture. The basis of the pre-war expansion of the worsted industry appears to have been twofold. In the first place, progression from woolen to worsted manufacture seems to be the usual order of development in wool manufacture. The production of woolen goods is in general a simpler process than worsted making. It involves less handling of the wool preliminary to the spinning stage and demands as a rule less skill both from management and labor.

Expansion went on rapidly in American worsted manufacture from the Civil War down to the close of the nineteenth century, and it became increasingly apparent that the woolen system was to be displaced as the prevailing method. In 1899, worsted first passed woolen output with respect to value. The first decade of the present century witnessed great additions to capacity, and a continuance of the trend away from the woolen system. Apparently, 1909 marked the end of the extremely rapid growth of the industry as a whole, and also of the marked expansion which had been going on for 10 years.

From 1909 to 1914 there was only moderate growth in total wool-manufacturing capacity and a somewhat less pronounced trend toward the worsted system.

The end of the World War found the United States with one-third more worsted than woolen spindles. Allowance must be made for the fact that the outer-wear knitting industry is a consumer of worsted yarns, but this does not invalidate the conclusion that the worsted branch of American wool manufacture has a capacity which can be kept busy only by a very large volume of staple business. Because of a great population of ample means, the wool-manufacturing industry of the United States is more happily situated than that of almost any other country. In 1925, the latest year for which production data are available, domestic manufacturers supplied almost the entire home demand for woolen and worsted goods.

The period of rapid expansion in wool manufacturing in the United States in the first 10 years of the century coincided with a time of progress in the United Kingdom, Germany, and Italy. In France, on the other hand, the woolen and worsted industries were at a standstill. French conservatism delayed the scrapping of worn machinery to give place to models of a more advanced order. Since the war, however, France has been reequipped with the most modern and efficient machinery obtainable, and is now capable of turning out wool goods in as great volume as before the war.

As in the United States and the United Kingdom, worsted manufacture in Germany was developing more rapidly than the woolen industry in the years before the war. By 1907, the German wool industry was heavily equipped for combing and for worsted spinning, in comparison with its woolen equipment. Wool manufacture in Germany profited by relatively low labor charges and longer hours; it was near coal and it was supplemented by an extensive hand-weaving industry. Yet by 1914 it was not thoroughly integrated, and depended on imports to supply its deficiencies in yarn and top production.

Reports from authentic sources show that German textile machinery deteriorated during the war period. The extent of replacement since 1918 can only be surmised. Data are so meager that nothing very certain can be stated as to the actual ratio of woolen to worsted equipment, but it is probable that at present Germany is better prepared to produce worsteds than woolens. The industry has benefited by a broader home market in relation to its production than has France or the United Kingdom and on this score enjoys, with the American industry, a distinct advantage.

Although Italy was beginning to show promise in wool manufacture before the war, it, like Germany, was not self-sufficient in regard to intermediate products, such as tops and yarns. Worsted manufacture was increasing before 1914, but woolen spindleage was still considerably in excess of worsted. In spite of military demand for woolens, in the 10 years between 1913 and 1923 carded wool spindles increased from 521,000 to 550,000 or only 6 per cent, while worsted spindles increased 32 per cent, making the total 500,000 in 1923, as against 378,000 worsted spindles a decade before.

The following table, compiled by the Department of Commerce, shows the machinery equipment of the principal wool manufacturing countries of the world for the latest years for which statistics are available.

Wool manufacturing industries—Machinery equipment

[Source: Compiled by Department of Commerce. For latest years for which statistics are available]

Country	Year	Number of mills	Sets of cards	Combing machines	Spindles	
					Woolen	Worsted
United States	[1] 1925	973	6,140	2,733	2,258,436	3,714,573
United Kingdom	[2] 1923	2,218	6,130	2,474	3,111,085	3,609,545
France	1922	[4] 783		1,757	679,131	2,292,409
Belgium	1924	150	639	340	339,705	242,200
Germany	[7] 1907	[8] 15,925	1,721	2,119	1,956,342	2,236,364
Italy	1924	800	1,500	500	550,000	500,000
Austria	1924	40–50	162		40,000	90,000
Poland	1923	420			450,272	406,834
Netherlands	1924	83			206,706	
Greece	1923	13				
Peru	1924	5	42		4,542	
Czechoslovakia	1924	313			596,000	450,000
Australia	1924	52	318	121	1,014,000	630,000
Denmark	1924	33	175		70,000	12,000
Norway	1916	[13] 83				
Sweden	1923	[9]			251,000	
Argentina	1924	20	107	30	19,400	
Turkey	1924	14			21,500	
Latvia	1923	146	194		32,976	
Mexico	1924	36	160		54,949	
Japan	1923	434	196	368	90,960	281,456
Hungary	1924	12			27,260	
Spain	1924	[10] 210	445	510	340,400	
India, British	1921	8			50,981	
India, States	1921	2			2,920	

Country	Year	Spindles, twisting	Looms			Number of employees
			Wide	Narrow	Hand	
United States	[1] 1925	960,935	62,497	18,056	117	206,110
United Kingdom	[2] 1923	1,352,196	[3] 118,900			
France	1922		[5] 55,409			
Belgium	1924	87,770	[6] 2,600	6,000	1,400	30,000
Germany	[7] 1907	578,741	[5] 71,881		23,960	
Italy	1924	150,000	[3] 18,000		2,000	65,000
Austria	1924	40,000	2,630			11,000
Poland	1923		[3] 15,286		2,259	
Netherlands	1924		[3] 4,256			
Greece	1923		[10] 428			1,628
Peru	1924	60	187			791
Czechoslovakia	1924		[11] 11,874			
Australia	1924	35,800	1,750			6,000
Denmark	1924	12,000	[3] 1,200			
Norway	1916					
Sweden	1923		[3] 4,200			11,000
Argentina	1924	2,240	[3] 794			
Turkey	1924		[3] 310		340–390	3,000
Latvia	1923		[3] 116			1,987
Mexico	1924		[3] 881		806	4,945
Japan	1923		[12] 11,812		[14] 6,645	[15] 40,222
Hungary	1924		[3] 1,100			
Spain	1924	33,400	[3] 7,800			[17] 29,000
India, British	1921		[3] 1,576			5,087
India, States	1921		[3] 68			530

[1] Includes woolens, worsteds, carpets and rugs, felt goods and wool-felt hats.
[2] Figures covering looms and woolen and worsted spindles are 1923 estimates. Other figures are from 1918 statistical report of Bradford Chamber of Commerce, woolen and worsted goods only.
[3] Width not given, figures, therefore, include both wide and narrow looms.
[4] Establishments employing more than 5 persons.
[5] Does not include 10,000 hand looms and 1,400 carpet and rug looms.
[6] Wide—150 centimeters (59 inches) or wider. Narrow—under 150-centimeter width.
[7] Undoubtedly out of date and incorrect to-day, but are the latest figures available.
[8] Includes household establishments.
[9] Width not given; figures, therefore, include both wide and narrow looms but does not include 747 ribbon looms.
[10] Width not given; figures, therefore, includes both wide and narrow looms but does not include 870 carpet looms nor hand looms in the homes.
[11] Wide—170 centimeters (66.9 inches) or over.
[12] Of which 55 manufacture both wool and cotton.
[13] Ranging from 56 to 96 inches in width.
[14] Width chiefly 30-inch.
[15] Seven thousand, five hundred and sixty-one males and 32,661 females.
[16] Woolen and worsted piece-goods mills. There are also 16 wool knit-goods mills, 19 felt and wool cap mills, 135 yarn mills, and 30 scourers and shoddy producers.
[17] Includes employees not only in the 210 woolen and worsted mills but also in the 16 knit goods, 19 felt, etc.

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GREAT BRITAIN

ORGANIZATION

In the United Kingdom the organization of wool manufacture is, in many respects, different from that in the United States. In the British worsted industry differentiation of processes is the prevailing form of organization. In the woolen industry the predominant note is, and always has been, that of integration—the concentration of all processes in a single establishment.

Worsteds.—The wool is usually purchased directly from the growers at local British fairs, or indirectly at the Australian and London auctions, by manufacturers, wool merchants, or top makers. If the top maker buys his wool unsorted, either directly at the wool auctions, or from the merchants, it is sorted under his direction; staples of various types and grades are blended and made into tops, usually by the commission combers. It has been estimated that 70 per cent of the tops consumed in the British worsted industry are combed on commission. The combing section of the industry is highly specialized. Some top makers handle only a particular range of tops; for example, crossbreds of certain quality, or Botany types. Similarly, commission combers often confine their operations to particular qualities. With this specialization it is possible to develop great skill in combing and to conduct operations in an efficient manner. Wool scouring is carried on as an integral part of the work of the combers and spinner-combers; it also forms the basis of a separate branch of the industry. Scouring plants confine their operations entirely to scouring and are run on the commission system.

Worsted spinning continues to be predominately a separate and distinct section of the industry. There are certain tendencies toward integration, exemplified by the spinning-combers already mentioned; nevertheless, the spinner who buys his top from the top maker and sells the finished yarn is still the characteristic figure. The spinning of yarns on commission has declined greatly in recent years. The large profits made by commission spinners on Government contracts and the long credits allowed by the Government in the purchase of tops during the war enabled them to accumulate sufficient capital to start for themselves.

An exception to the general system of organization occurs in the spinning of mohair and alpaca yarns. The preliminary process—scouring, carding, and combing—and spinning, are often carried through in the same establishment. The reasons for this variation appear to be partly historical and partly technical. When the utilization of mohair and alpaca on a factory basis was begun, no one knew how to comb the staple, and the early manufacturers of such fibers had to learn for themselves. Consequently, a combination of the two stages of production was adopted. The nature of mohair and alpaca fibers calls, to some extent, for special treatment. The combing machines employed are usually of a different type from those in common use for wool—the Lister instead of the Noble. The length of the staple and its luster, upon which its value largely depends, make necessary special care in preliminary manipulation. The best results can be secured when these processes are under the direct supervision of the person who is also responsible for the spinning.

In the weaving section, as in the spinning section of the industry, there has been a decline, in recent years, in the commission form of operation. The weaver, or "manufacturer," sometimes buys his yarns from the spinner and sells his product "in the grey" to the merchant. He may, however, have it dyed and finished in his own plant or by a commission concern and then sell it to the merchant. In fact, the practice of selling "in the grey" to a merchant who directs the dyeing and finishing himself, to suit his own requirements—a method of operation which has in the past been important—is alleged to have lost favor and now to have become uncommon.

Dyeing is not really an independent branch of the industry like top making, spinning, and weaving, as the work is conducted for the most part on commission for the manufacturer or for the merchant. The dyeing of wool, tops, and yarns, is largely concentrated in the hands of a single corporation, while the dyeing of cloths, which may also include finishing, is largely monopolized by another corporation. Both work on commission. The patrons of such concerns are either manufacturers who have no dyeing departments in their mills, or fabric merchants who buy "in the grey." An increasing proportion of the dyeing is carried on in the weaving mills themselves. Finishing is sometimes carried on independently, although it is often combined with dyeing either in the same plant or under the same management. It is, like dyeing, prosecuted upon the commission system, and it likewise serves manufacturers who lack equipment, or merchants who buy "in the grey."

The worsted industry is so fully differentiated that even the final operation of handling the goods in the manufacturing centers, that of packing for shipment, is often carried on in separate establishments. This work is on a commission basis and is conducted for the convenience of manufacturers and merchants who have no shipping departments or whose facilities are inadequate.

In contradistinction to the whole organization outlined above, is the unmistakable tendency toward integration which can be seen in the English worsted industry. To some extent, this is being brought about by the combination or consolidation of previously distinct, but industrially complementary, firms. A spinner may purchase a combing plant, or a weaver the works of a spinning comber. Such integration has been, in recent years, a not uncommon occurrence in the trade. Other integration has taken place through the extension of plants; for example, the building of a dyehouse by a weaving concern. Still another example is that of the well-known Saltaire Mills, an establishment similar in form to our worsted mills, and containing all the processes from sorting to packing, constructed at one time. Differentiation is still the predominant characteristic of the British worsted industry, but one should not lose sight of the increasing number of integrated and partially integrated concerns, either in single or scattered establishments, in Yorkshire at the present time.

Worsted dress goods are produced largely in the Bradford and Halifax districts, while the manufacture of the finer qualities of men's wear is centered in Huddersfield.

Woolens.—Although woolens are usually manufactured in a single establishment, the dyeing of wool and the dyeing and finishing of fabrics are not always carried on in such plants, but are frequently turned over to the commission firms in that trade. Manufacturers

who require a large variety of colors and shades on their wool, or who have very fine fabrics to finish, make use of the services of commission firms. Also, there are some separate spinning plants, whose product goes to supplement the spinning output of integrated mills, and which is bought by the flannel, hosiery, and carpet trades. Yet, on the whole, in Yorkshire, the west of England, and Scotland, the typical form of organization is integration.

The woolen industry is centered in the West Riding of Yorkshire, with important branches in the west of England and in parts of Scotland and Ireland. The woolen mills of Yorkshire are mainly situated in the Huddersfield, Leeds, Dewsbury, Batley, and Morley districts. The border districts of Scotland are noted for tweeds, fine woolens, and hosiery, and, of late years, the west of England has replaced, to a large extent, its former trade in broadcloths by the manufacture of high-grade uniform cloths and specialties. The Irish mills have a reputation for high-grade tweeds and friezes.

Blankets and flannels are important products of the woolen industry. Their manufacture is centered in the Dewsbury and Rochdale districts, respectively. Blankets are also made at Whitney in Oxfordshire and flannels at Dolgelly and Welshpool, in Wales.

SIZE OF THE INDUSTRY

Among the textile trades of the United Kingdom, the woolen and worsted industry is second only to the cotton industry. In 1913, the woolen and worsted industry contributed to the export trade in the form of tops, yarns, piece goods, and other manufactures of wool, a value of more than £37,000,000. Reliable figures as to the total production of the country are unobtainable. In the Census of Production of 1907 the gross output of that year was placed at a value slightly over £70,000,000, of which about half was exported and half retained for home consumption.

The number of persons employed in the wool manufacturing industry of the United Kingdom, in 1918, including the carpet and shoddy industries, and dyeing and finishing, was 256,400. At that time the war had interfered with the normal operations of the industry and its employees had been reduced in number as far as was consonant with the military needs for wool fabrics. Some addition would have to be made, therefore, to make the figure representative of normal conditions. The number of persons engaged in American wool manufacture was 208,225 in 1919, 201,890 in 1921, and 250,105 in 1923.

In regard to machinery employed, a report on British wool manufacture [2] in 1918, showed a total of 3,061,085 woolen spindles and of 3,466,457 worsted spindles of all types. The corresponding American figures, as given by the war census of 1918, were: Woolen spindles, 2,705,625, and worsted spindles, 2,341,174. In regard to looms, the British industry had, in 1918, approximately 114,000 of all varieties, except carpet and rug looms, while for the same year the war census gave the number in American mills as 80,867. In other words, the British industry had in 1918, 13 per cent more woolen spindles, 50 per cent more worsted spindles, and some 40 per cent more looms than the American industry.

[2] "Report of the departmental committee appointed by the Board of Trade to consider the position of the textile trades after the war," 1918.

EXPORTS

The total exports of woolens and worsteds from the United Kingdom in the years 1913, 1914, 1923, and 1924, were as follows:

Total exports of British woolen and worsted tissues, 1913–1924

[Source: Trade and Navigation of the United Kingdom]

	1913		1914	
	Quantity	Value	Quantity	Value
	Linear yards		*Linear yards*	
Woolen tissues	105, 883, 600	£14, 466, 569	81, 996. 700	£11, 573, 508
Worsted tissues	62, 490, 104	6, 186, 379	70, 304, 400	6, 203, 860
Total	168, 373, 704	20, 652, 948	152, 301, 100	17, 777, 368

	1923		1924	
	Quantity	Value	Quantity	Value
	Square yards		*Square yards*	
Woolen tissues	148, 555, 700	£28, 280, 913	164, 752, 400	£30, 141, 383
Worsted tissues	62, 935, 100	11, 399, 639	56, 832, 200	10, 052, 96 0
Total	211, 490, 800	39, 680, 552	221, 584, 600	40, 194, 343

In 1913 Canada purchased 13 per cent of the total value of the above exports; Germany, 9 per cent; France, 8 per cent; Australia, 8 per cent; Argentina, 7½ per cent; and the United States, 5 per cent. In 1924 Canada took 11 per cent; Germany, 2 per cent; France, 2 per cent; Australia, 7 per cent; Argentina, 6 per cent; and the United States, 9 per cent.

Compared with the British exports of woolen and worsted cloths and dress goods in 1924, amounting at par of exchange to $195,605,770, the United States exported, in the same period, similar fabrics valued at $1,246,789.

A report to Parliament in 1918 showing the position of the textile trades after the war (departmental committee on the textile trades), contains the following statement regarding trade with the United States in woolen and worsted manufactures:

> Our trade with the United States has fluctuated considerably in consequence of tariff changes. In 1890 the exports of woolen and worsted manufactures were valued at £5,148,000. Then came the McKinley tariff, and in 1891 the exports had fallen to £3,178,000. A similar reduction was again experienced in 1897 as a result of the Dingley Tariff Act. During the few years preceding the outbreak of war the exports of piece goods averaged from £1,000,000 to £1,500,000, in spite of the fact that woolen and worsted cloths paid duties varying from 1s. 4½d. per pound and 50 per cent ad valorem to 1s. 10d. per pound and 55 per cent ad valorem.
>
> The effect of the Underwood Tariff Act of 1913, with its modifications of duties, was showing itself in increased shipments when the war broke out, although it should be noted that the removal of the import duty on raw wool entering the United States gave a stimulus to American domestic manufactures. Partly as a result of the new tariff act, and partly, no doubt, as a result, of the war and the cessation of continental competition, the exports in 1914 to the United States advanced to £3,471,482, and, although this total was not maintained in 1915 and 1916, the figures still show a considerable advance on the pre-war shipments.

The following table shows the quantity and value of British woolens, worsteds, and flannels exported to the United States from 1901 to 1925, inclusive:

Exports of woolen and worsted tissues and flannels from the United Kingdom to the United States 1901–1925

[Source: Annual Statement of the Trade of the United Kingdom with Foreign Countries]

Year	Woolen tissues		Worsted tissues		Total woolen and worsted		Flannels	
	Quantity	Value [1]	Quantity	Value [1]	Quantity	Value [1]	Quantity	Value [1]
	Yards [2]		*Yards* [2]		*Yards* [2]		*Yards* [2]	
1901	1,474,900	$1,612,675	13,056,100	$3,151,974	14,530,100	$4,764,649	207,100	$50,787
1902	1,798,400	1,989,868	20,870,100	4,278,549	22,668,500	6,268,417	212,000	41,166
1903	1,858,800	1,820,451	26,132,400	5,037,660	27,991,200	6,858,111	177,400	36,265
1904	1,555,400	1,452,100	25,083,100	4,795,240	26,638,900	6,247,340	259,800	53,619
1905	1,703,600	1,763,396	34,001,000	6,528,152	35,704,500	8,291,548	275,800	56,593
1906	1,565,700	1,814,411	23,568,100	4,942,194	25,133,800	6,756,605	500,600	97,370
1907	1,682,900	1,917,703	22,774,300	4,824,682	24,457,200	6,742,385	468,200	94,595
1908	1,266,900	1,479,100	16,080,100	3,401,538	17,347,000	4,880,638	422,100	85,680
1909	2,163,500	2,167,106	22,849,400	4,788,909	25,012,900	6,956,015	607,600	124,704
1910	2,686,000	2,559,988	23,035,100	5,210,148	25,721,100	7,700,136	613,500	125,599
1911	2,445,600	2,382,685	11,831,000	3,217,014	14,276,600	5,499,699	406,700	91,515
1912	2,082,800	2,191,258	10,022,500	2,706,037	12,105,300	4,897,295	621,300	153,864
1913	2,189,800	2,350,140	9,218,400	2,622,362	11,408,200	4,972,502	469,000	115,769
1914	8,218,900	6,649,708	32,790,000	16,743,999	41,008,900	17,393,707	896,800	226,644
1915	4,149,100	3,904,609	17,605,300	6,017,664	21,754,400	9,922,273	631,100	164,865
1916	4,608,900	4,990,773	7,751,700	3,232,047	12,360,600	8,222,820	619,000	187,796
1917	3,253,700	4,474,284	5,794,100	3,051,600	9,047,800	7,525,884	650,900	249,840
1918	1,500,800	2,746,934	3,357,600	2,388,800	4,858,400	5,135,734	195,500	109,764
1919	2,177,100	4,284,422	1,589,800	2,011,803	3,766,900	6,296,225	558,700	408,376
1920	7,499,800	11,337,134	6,714,400	6,215,003	14,214,200	17,552,737	811,900	595,448
1921	6,090,800	7,523,363	6,454,000	5,465,521	12,544,800	12,988,884	487,900	195,875
1922	6,897,400	8,125,696	6,413,200	5,334,823	13,310,600	13,460,519	208,900	172,241
1923	9,850,500	11,466,478	7,554,800	5,707,305	17,405,300	17,173,783	580,700	256,007
1924	10,293,300	10,790,848	6,897,900	4,786,542	17,191,200	15,577,390	1,741,200	613,309
1925	9,649,000	11,039,445	6,510,800	4,960,059	16,159,800	16,599,504	1,252,400	755,619

[1] Value converted at par 1901 to 1914, thereafter at average yearly rate.
[2] Up to and including 1919, linear yards; thereafter square yards.

It will be noted that in these British exports to the United States the tendency has been toward an increase in woolens and a decrease in worsteds. In the period just prior to the war and during the war, worsteds exceeded woolens in this trade, but under the tariff act of 1922 woolens predominate. This was mainly due to a demand for fancy backed woolen overcoatings and for woolen suitings made of highly colored mixtures used in sport clothing. The labor cost on fancy backed overcoatings is greater in proportion to the material cost than on single fabrics, because they are woven more slowly. It is on this type of fabric that the foreign producer comes nearest to meeting on the American market the prices quoted by the domestic manufacturer.

IMPORTS

Imports into the United Kingdom of woolen yarns and tissues amounted in value to nearly ten and one-half millions sterling in 1913, or less than one-third the value of the total exports. The imports of piece goods amounted in value to £5,344,000. These were chiefly dress goods for women's wear, produced as a rule with single merino yarns in the warp. Apart from dress goods, imports of woolen and worsted fabrics into the United Kingdom were not very considerable, when compared with the total production of the country. Of cloth

for men's wear, and of the heavier fabrics for women's wear, very little came from abroad.

Imports of woolen and worsted yarns and manufactures amounted to £11,781,081 in 1923 and to £14,869,321 in 1924. Woolen and worsted tissues, flannels, and delaines accounted for £4,711,446 in 1923 and £6,107,254 in 1924.

In recent years the importation of dress goods from France has increased to such an extent that the Bradford worsted industry has applied for a duty of 33⅓ per cent ad valorem on "tissues or fabrics, whether in the piece or any other form, of any weight from 2 ounces a square yard up to and including 11 ounces a square yard, made wholly or partly from wool or hair." The committee of inquiry appointed by the British Board of Trade to inquire into this application for a protective tariff adjourned on December 18, 1925, to consider the evidence in private before making a report to the Board of Trade. The following summary of the hearings may be of interest:

(1) The duty applied for was a 33⅓ per cent ad valorem rate on the above-mentioned fabrics or tissues imported into the United Kingdom.

(2) The applicants for the proposed duty were the Bradford and District Manufacturers' Federation, the Keighley and District Manufacturers' Federation, and the Textile Commission Manufacturers' Association. Opposition was offered by a group committee formed by the textile branch of the London Chamber of Commerce, but the chamber itself was not identified with the action of the committee.

(3) The ancient worsted industry of Yorkshire, the products of which have been known all over the world for centuries and which claimed to give employment to 100,000 workmen, alleged that during the last few years its English domestic market had decreased and foreign fabrics were being offered in the home market at lower prices than those at which it was possible for the Bradford manufacturers to produce them. It was pointed out that in 1920 imports of woolens and worsteds were 10,477,429 square yards, and by 1924 the figures had grown threefold to 29,609,684 square yards. Moreover, the rate of increase in the present year (1925) over 1924 was still more marked, and although the figures were not yet available, it was estimated that the total would prove to be four times the import of 1920. It was not possible to give the precise figure for worsteds alone, owing to the frequent confusion between woolens and worsteds, but the great bulk of the increased imports were lightweight cloths, and were retained for consumption in the United Kingdom. Since 1921 there has been a steadily diminishing number of looms at work, with consequent unemployment, the results entirely of the severity of foreign competition at low prices.

(4) The principal competitors were alleged to be the worsted and light fabric industries of France, which were able to produce goods at lower labor cost by reason of a state of depreciating currency with respect to British exchange.

(5) The applicants for the protective duty engaged not to raise their prices to the English domestic market if foreign competition was eliminated, and urged that their principal motive was to reduce unemployment within the British worsted industry.

The report of the committee of inquiry was issued on April 22, 1926. The committee found that the applicants failed to substantiate a case for the imposition of a duty, as the evidence of unemployment did not support the view that employment in the industry was being seriously affected by the volume of retained foreign imports. The committee recommended, however, that depreciation of foreign currencies, volume of retained imports, and employment in the industry be closely observed, and that if seriously increased unemployment arising from a substantial increase in the volume of retained imports be accompanied by an increase in the bounty obtained by foreign manufacturers as a result of further currency depreciation, a duty computed upon the basis of the rate of 12½ per cent ad valorem be imposed, which it stated would be found sufficient to countervail the export bounty obtained by foreign manufacturers under such conditions.

The following essential decisions were contained in the committee's report:

We find that foreign goods of the class or description to which the application relates are being imported into and retained for consumption in the United Kingdom in abnormal quantities.

The applicants have proved their contention that foreign goods are being sold or offered for sale in the United Kingdom at prices which are below those at which similar goods can be profitably manufactured or produced in the United Kingdom.

We have arrived at the conclusion that unemployment is not at present seriously affected by the importation of foreign competitive goods.

We consider that should importation continue to increase in a volume such as is indicated by the experience of recent years, such importation may exert a seriously adverse effect upon employment in the industry.

We are of the opinion that competition is unfair owing to the depreciation of the French currency operating so as to create an export bounty.

Having regard to the evidence adduced, we are of opinion that the applicants have failed to establish inferior foreign conditions of employment of labor, either as regards remuneration or hours of employment.

We find that competition is unfair only in so far as it arises from depreciation of French currency, which operates so as to create an export bounty in favor of the French manufacturer.

We are of opinion that the applicant industry is being carried on in the United Kingdom with reasonable efficiency and economy.

We are of the opinion that the imposition of a duty on goods of the class or description in question would not exert a seriously adverse effect on employment in any other industry using goods of that description in production.

FRANCE

The requirements of the French woolen industry amount to at least 250,000 metric tons (about 551,150,000 pounds)[3] of wool a year. The number of sheep in France has been falling for many years; in 1913 it was slightly more than 16,000,000 head; in 1919 barely 9,000,000; in 1924 it was estimated at less than 10,000,000. The present home production of wool amounts to 48,500,000 pounds, or approximately two-thirds of the pre-war figure, and as no great improvement is expected the manufacturers have turned to the colonies to make good a part of the deficiency. In Algeria there are 10,000,000 sheep, of which 6,000,000 are clipped and produce about

[3] Report on the Economic and Industrial Conditions in France, 1925, published by Department of Overseas Trade, London.

33,000,000 pounds of wool; Tunis, with 2,000,000 sheep, produces 4,409,000 pounds of wool; and Morocco, with 7,000,000, 22,000,000 pounds. French West Africa, with 2,000,000 sheep, produces 2,205,000 pounds, and in this territory, as well as in Madagascar, the Roubaix-Tourcoing industries are providing for systematic experimental breeding by promoting the introduction of merinos.

Imports of wool into France in 1924 amounted to 491,935,767 pounds, as against 577,430,120 pounds in 1923 and 592,521,744 in 1913. Australia is the most important source of supply, with shipments totaling 208,900,841 pounds in 1924.

It may be safely asserted that the French woolen industry, which since the beginning of 1922 has been extremely active, has never had a more prosperous year than 1924. Imports, both of woolen yarn and of piece goods, declined considerably, while exports of both attained unprecedented volume; exports of woolen fabrics were, in weight greater by 19,841,400 pounds than in 1923, and by 24,250,600 pounds than in 1913. It will be recalled that, during the War, France was deprived of nearly all its working mills (2,000 out of 2,500 combing machines, nearly all of its 2,000,000 spindles, and 39,000 out of 55,000 looms were in the devastated regions) and that the immense woolen imports during the war, and until 1920, which were mainly from England, were due to this fact. The return of Alsace to France increased the woolen and worsted industries of the nation as follows: Worsted combs, 356; worsted spindles, 505,206; woolen spindles, 16,000; and looms, 6,623. The total wool machinery in France in 1925 was approximately as follows: 1,900 combing machines; 2,400,000 worsted yarn spindles; 800,000 woolen yarn spindles; and 55,100 looms.

The following table, which shows the imports and exports of wool yarns and piece goods since 1912, forcibly illustrates the immense advance made since 1919.

French imports and exports of wool yarns and piece goods, 1912–1924

[Source: Economic and Industrial Conditions in France, 1925]

Year	Imports		Exports	
	Yarn	Piece goods	Yarn	Piece goods
	Pounds	*Pounds*	*Pounds*	*Pounds*
1912	2, 522, 062	9, 726, 695	29, 826, 033	46, 675, 791
1913	2, 107, 598	9, 519, 463	32, 720, 673	51, 605, 277
1915	10, 235, 958	72, 377, 018	123, 458	3, 152, 578
1916	15, 202, 922	94, 773, 549	257, 938	3, 789, 707
1917	15, 332, 993	52, 478, 298	125, 662	4, 733, 276
1918	13, 311, 375	34, 572, 537	48, 501	2, 660, 952
1919	15, 057, 418	48, 503, 405	3, 957, 257	12, 206, 870
1920	8, 915, 402	23, 393, 011	13, 071, 073	31, 464, 051
1921	1, 373, 466	3, 778, 684	21, 450, 758	34, 325, 622
1922	2, 089, 612	5, 262, 380	27, 299, 562	40, 130, 334
1923	2, 284, 989	3, 130, 532	28, 807, 508	56, 230, 528
1924	1, 671, 087	2, 724, 886	34, 912, 046	75, 994, 767

The exports to Great Britain of French wool piece goods constituted a large trade before the war; in 1912 and 1913, the weights were 14,936,165 and 16,955,579 pounds. In recent years, French exports to Great Britain have been promoted by the depreciation of the franc in relation to sterling. Exports of wool piece goods from

France to Great Britain amounted to 15,392,517 pounds in 1923 and to 20,729,854 pounds in 1924. These were mainly worsted dress goods weighing less than 11 ounces per square yards. Exports to the United States of wool cloths and dress goods were valued at $1,129,013 in 1913; $2,103,759 in 1923; and $2,051,616 in 1924.

French wool goods are distinguished by their variety and originality of design. The trade thrives on the manufacture of fashionable goods and fancy articles. Roubaix-Tourcoing makes fancy and staple goods in both high and low grades; Sedan specializes in fine cloths; Rheims makes cashmeres, merinos, and expensive fashionable novelties. Fine black cloths, both woolen and worsted, are produced at Elbeuf, as well as fashionable goods, riding habits, uniforms and flannels. Carded cloths for ordinary use are manufactured at Vienne and military fabrics at Lodeve and Cleremont. As regards plants and equipment, the industry, with its high proportion of new spindles and looms, is capable of more efficient production than before the war. France now supplies both the home market and foreign markets to a much greater extent than in 1912 or 1913.

GERMANY

The last official report available as to the wool machinery equipment of Germany was made in 1907. At that time the equipment was as follows: 1,721 sets of cards; 2,119 combs; 1,956,342 woolen spindles; 2,236,364 worsted spindles; 578,741 twisting spindles; and 95,841 looms. Approximately one-fourth of the last-named were hand looms. The return of Alsace to France resulted in a loss to Germany of 356 combs; 505,206 worsted spindles; 16,000 woolen spindles; and 6,623 looms.

The wool textile industry in Germany is not centralized but is distributed over the whole country. The situation of the spinning and weaving mills is primarily the result of historical growth; their foundation dates back to the era of household industry. Such considerations as fuel and power supply, accessibility to markets, etc., have played a much smaller rôle.

It is possible to designate several of the more important production areas. (1) The Niederlausitz region, including the southeastern portion of the Mark of Brandenburg and northern Silesia, produces chiefly heavy worsted fabrics, but also a variety of carded woolen textiles. (2) The Saxon-Thuringian district makes a specialty of the finest grades of woolen cloths; goods mixed with silk, and materials for women's suits. In and about Chemnitz various finished goods and upholstery cloths are made. (3) There are an upper Rhenish district and a lower Rhenish region which manufacture fine woolens, women's wear, and imitations of English tweeds, homespuns, and men's heavy suitings. Aix-la-Chapelle is one of the chief centers in this district for fine woolen velours and similar fabrics. (4) There is an important woolen industry at Freiburg in Baden. (5) The Wurttemberg area produces a variety of woolen goods. In addition to these roughly defined districts, there are large woolen mills in a number of north German cities, especially in Bremen, Hamburg, and Berlin.

In Germany, as a rule, a single enterprise is engaged in every stage of manufacturing from the washing of the wool to the finishing and

dyeing of the cloth. Not many establishments are merely spinning mills, although a few firms specialize in worsted yarns and do not go on with the weaving. Worsted weaving mills are almost invariably connected with spinning mills. An increasing number of worsted spinning mills take work on contract from other plants, usually weaving and finishing establishments which purchase the raw wool and supply it to the spinners. There are a good many separate dyeing and finishing establishments, but the work is usually carried on in connection with the weaving mills. Until recently there has been a rather strict differentiation between the spinners making the finer grades of yarn and those manufacturing coarser grades. This distinction tends more and more to be obliterated.

Germany's domestic wool production is entirely insufficient for her needs. In 1922 she imported about 90 per cent of all the raw wool consumed by her spinning mills. The decrease of wool production within the last half century has been striking. At the close of the Franco-Prussian War, the German wool clip was nearly five times as great as it is to-day, while domestic consumption was much less. Imports of raw wool in the calendar years 1923 and 1924 were as follows:

German imports of raw wool, 1923 and 1924

	Quantity		Value	
	1923	1924	1923	1924
Merino wool:	*Pounds*	*Pounds*		
In the grease	192, 873, 399	193, 837, 691	$78, 443, 548	$92, 041, 671
Washed before shearing	4, 333, 582	4, 589, 977	3, 367, 910	4, 366, 921
Washed after shearing	10, 928, 423	12, 476, 272	10, 580, 368	14, 814, 134
Crossbred wool:				
In the grease	71, 667, 640	97, 862, 414	15, 000, 883	30, 378, 122
Washed before shearing	3, 696, 453	2, 773, 607	1, 161, 701	1, 083, 572
Washed after shearing	8, 918, 268	12, 882, 801	3, 253, 574	5, 877, 823

Imports of merino wool are mainly from Australia, Argentina, and British South Africa. Crossbred imports, both before and after the war, have come from a number of sources, of which Argentina is the most important.

Before the war Germany's needs for woolen goods were met largely by domestic production. This was especially true of finished goods, such as cloths, suitings, carpets, men's and women's wear, and upholstery cloths. Her need for finished yarns was less adequately supplied at home, and half-fabricated yarns, i. e., tops, also noils for woolen yarns, were imported to the extent of about 30 per cent of total domestic requirements of the spinners.

Imports of wool fabrics (suitings, etc.) weighing more than 700 grams to the square meter (=20.6 ounces per square yard); press cloths, webbing, sieves for oil pressing and felt cloths for pulp mills, amounted to 132,937 pounds, valued at $248,443, in 1924. Fabrics weighing from 200 to 700 grams to the square meter (=5.9 ounces to 20.6 ounces per square yard), amounted to 2,725,547 pounds, valued at $6,381,854, and fabrics less than 200 grams to the square meter (=less than 5.9 ounces per square yard), amounted to 6,346,602 pounds, valued at $18,946,666, in 1924. Imports were mainly from Alsace-Lorraine, the United Kingdom, Austria, and Belgium.

Exports of woolen suitings and other fabrics (press cloth, felt cloth, etc.) amounted to 28,418,617 pounds, valued at $36,619,201, in 1923, and 22,037,182 pounds, valued at $36,420,304, in 1924. Exports of the above fabrics to the United States increased from 591,274 pounds in 1923 to 1,282,636 pounds in 1924. The largest users of German woolens and worsteds are Austria, the Netherlands, Sweden, Denmark, and Switzerland.

BELGIUM

The output of the Belgian wool manufacturing industry is not in itself sufficient to supply the home consumption of wool fabrics. Belgium produces only about 825,000 pounds (less than 400 tons) of raw wool annually and therefore must import a considerable quantity. Prior to the war Belgian wool imports averaged about 150,000 tons annually, of which fully two-thirds was reexported, leaving approximately 50,000 tons for local consumption. Consumption since the armistice has ranged between 25,600 and 53,900 tons.

The spinning of woolen and worsted yarns is mainly concentrated in and about the city of Verviers. Outside this district there are important woolen and worsted cloth mills at Tournai, St. Nicolas, Eecloo, Loth, Dinant, and Malines. The Belgian wool industry employs about 30,000 hands, of which 16,000 work in Verviers alone. There are in Verviers 12 worsted mills employing 4,000 operatives and 85 woolen plants of various sizes, engaging some 12,000 operatives. The Verviers spinning industry comprises about 355,000 spindles, of which 180,000 belong to the woolen and 175,000 to the worsted branch. The machinery equipment of Belgium has not greatly altered since the war. In 1924 it was estimated to be as follows:

Sets of cards	639
Woolen spindles	339, 705
Worsted combs [1]	340
Worsted spindles	242, 200
Twisting spindles	87, 770
Looms (59 inches or wider)	2, 600
Looms (narrower than 59 inches)	6, 000

The products of Belgian mills include fancy worsted trouserings, overcoatings, whipcords, one-and-one worsteds, tropical worsteds, gabardines, uniform cloths, and various grades of cheviots, serges, and other suitings. Two firms specialize in billiard cloths of 63 to 75 inches in width, weighing 25 to 30 ounces per linear yard; these have sold well in the United States. The total annual production of woolens and worsteds in Belgium is estimated to be about 280,000 pieces, of 40-meter length.

The arrangement of Belgian trade statistics is not such as to give a very clear idea of the foreign trade in woolen and worsted fabrics. In general, however, the Belgian industry has never been able to supply the entire demand at home, and in 1913 the quantity of imports exceeded exports by 25 per cent. The year 1919 was one of replenishing stocks of raw material and finished products, so that imports far exceeded exports. After the prosperity and large exports of 1920 and the depression of 1921 the wool-goods trade in 1922 resumed substantially its pre-war proportions, with imports exceeding exports by about 16 per cent and the figures for total volume in each class not

[1] The worsted combs are chiefly of the Heilmann type.

differing greatly from those of 1913. The principal sources of Belgian imports of woolens and worsteds, before the war and since, have been Great Britain, Germany, and France, in the order named.

Belgium has been largely cut off from French and Spanish markets by high protective tariffs, and the best European fields for Belgian woolen piece goods are Great Britain, the Netherlands, and Switzerland. Of oversea purchasers the most important are Argentina and British India, the latter especially for tropical fabrics. The Netherlands is the largest importer of Belgian shawls, while upholstery cloths find their best markets in Great Britain and the United States.

Although a few of the best known Belgian mills are represented in the United States, most of them have never made a pronounced effort to enter the American market, principally because they are small, conservative in method, and not possessed of adequate means for floating a conspicuous sales campaign. They are obviously not able to compete on a quantity basis, and with rising costs of fuel, freight, and raw materials their advantage on specialties is not great. A Belgian mill, however, will take an order for a few pieces, whereas an American mill requires orders in large quantities. The wide range of fabrics of the usual Belgian mill enables them by this policy to take advantage of momentary demands in various markets.

Belgian fabrics imported into the United States are mainly woolens. General imports of wool cloths and dress goods from Belgium were valued in the United States import statistics as follows:

1913	$617,675
1914	828,355
1922	567,587
1923	161,895
1924	333,339
1925	377,860

ITALY

The wool-manufacturing industry of Italy is centered in the Piedmont district, which possesses about half of the country's looms. Other sections of importance are Venice, Lombardy, and Tuscany.

Italy has a home production of raw wool amounting to about 57,000,000 pounds per annum. Of this quantity, however, about 18,000,000 pounds never reach the mills, but are used for stuffing mattresses and for nonindustrial purposes. The consumption of raw materials by the mills in 1913 and 1924 was as follows:

	1913	1924
	Pounds	*Pounds*
Imports of unwashed wool	28,486,868	68,196,019
Imports of washed wool	11,814,831	10,143,220
Imports of rags, waste, etc.	12,017,691	8,324,977
Total imports	49,299,390	86,664,216
Less exports of raw material	8,738,633	11,396,983
Imports less exports	40,560,755	75,267,233
Plus home production	37,485,000	37,485,000
Net consumption	78,045,755	112,752,233

It should be noted that the above figures exclude imports and exports of tops, which will be dealt with separately. Of the unwashed wool imported, half now comes from Australia and more than a quarter from South America. Italy has no established wool market, purchases of raw wool being made either through the London market or directly from Australia and South America. The direct-purchase system has been facilitated and popularized by the work of the Instituto Commerciale Laniero Italiano, which has its headquarters in Milan with branch offices in Biella and Genoa.

The number of wool-combing machines working in Italy increased from 30 in 1876 to 600 in 1925. This increase in combs naturally led to a corresponding decrease in the importation of tops. In 1922, 10,423,035 pounds were imported and in 1924, 6,005,758 pounds. Italy is now exporting tops on a small but on a very definitely increasing scale. Exports increased from 234,392 pounds in 1922 to 1,315,944 pounds in 1924.

The number of woolen and worsted mills in 1925, large and small, was about 850. If the woolen hosiery factories be included, the total is brought up to nearly 1,000. The machinery equipment in Italy in 1913 and 1925 was as follows:

	1913	1925		1913	1925
Woolen spindles	520,795	600,000	Hand looms	2,000	2,000
Worsted spindles	377,538	520,000	Combing machines	305	600
Power looms	15,000	19,000	Workers employed	56,000	70,000

Italian manufacturers now supply more than nine-tenths of the internal demand for wool goods, and they are continually extending their exportations. Foreign competition is felt mostly in women's materials, French products being somewhat favored because of the tradition of style. The value of wool textiles exported, which before the war was less than a third of the value imported, was actually greater during the fiscal year 1925 than that of imported goods. Recent betterment in the technic of production has rendered the Italian textile more acceptable to the local consumer and has also permitted a relative decrease in cost, with the result that the average consumption per capita during the fiscal year 1925 was about 1 kilo (2.2046 pounds) or slightly more than the pre-war per capita consumption.

Italy's imports and exports of wool textiles were as follows:

Year	Imports		Exports	
	All wool	Wool mixtures	All wool	Wool mixtures
	Pounds	*Pounds*	*Pounds*	*Pounds*
1909–1913, average	7,040,000	(1)	2,970,000	(1)
1921–22	2,662,000	66,000	5,786,000	946,000
1922–23	6,908,000	110,000	5,478,000	2,090,000
1923–24	5,324,000	88,000	11,418,000	2,552,000

[1] Not stated, owing to different tariff classification prior to June 30, 1921.

Imports of such goods are chiefly from England, France, and Germany. Exports go principally to the Balkan States, Yugoslavia, Greece, Egypt, and Turkey. Less important purchasers include Austria, the Dutch East Indies, Argentina, and Chile.

In international competition in the wool industry, Italy is under the handicap of a higher cost of installation of machinery and a higher cost of raw materials imported. On the other hand, Italy profits by the relatively low cost of labor and has the advantage of a considerable supply of home-grown wool. If hydroelectric power is used, the cost is no more than in other countries, but if coal is used in producing power, the cost is much higher than in most wool manufacturing countries. In 1925, the average wage of a girl was about 15 lire per day and of a man about 18 lire. This is, of course, cheap labor according to world standards, but before the war the average wage was 2 lire per day, so that the increase has been considerable. Piecework rates are in force wherever possible.

JAPAN

The wool-manufacturing industry of Japan had its origin in the weaving of army cloth at the Senju Mills in Senju, Tokyo. These were established in 1877 in accordance with the suggestion of Okubo, then the Minister for Home Affairs. Various other mills were built during the wars with China and Russia, so that the total number in 1925 was 42. The Japanese production of mousseline de laine and flannels is more than sufficient for the home consumption, and it is predicted that it will not be long before Japan can supply herself with woolen cloth and serges.

Since the earthquake, financial stringency and depression have characterized Japanese wool manufacture. Many of the smaller plants have not operated owing to lack of capital.

Muslin-making machinery has a yearly capacity of nearly 200,000,000 yards, but the consumption is placed at only 85,000,000 to 100,000,000 yards. Negotiations between officials of the important producing organizations resulted in an agreement in 1924 to restrict output, fix prices, and divert some machinery to cotton weaving.

Imports of wool tops, woolens, and worsteds from Great Britain, during the year 1924, were very heavy, Japan being that country's best customer, but the expiration on March 1, 1925, of the conventional tariff is expected to extend the market possibilities for domestic manufacturers who are expanding their plants in the expectation that better opportunities in the home market will result from the increased import duties.

In Japan, attention is being called to the dependence of the local industry upon foreign countries for raw materials, and the Government is being urged to promote woolgrowing in Hokkaido and Manchuria. It is thought that Japan may attempt in the near future to increase wool production in the territories adapted to sheep raising which are under her control.

Japanese imports of raw wool increased from 11,570,000 pounds in 1913 to 62,060,000 in 1923.

Wool-working machinery damaged by the earthquake has been repaired, and there is more machinery in the country now than before the disaster. The following table shows the different kinds of wool machinery in Japan in 1924.

Wool-working machinery in Japan

Sets of cards	196
Combing machines	368
Woolen spindles	90,960
Worsted spindles	281,456
Looms [1]	11,812

CHAPTER 5

WAGES, HOURS OF LABOR, PRICES, AND COMPETITIVE CONDITIONS

WAGE RATES, HOURS OF LABOR, AND EARNINGS IN UNITED STATES

Wage rates for the several stages of cloth manufacture in the United States are fixed upon various bases. In some occupations, such as wool carding, time rates are employed; in spinning, some mills pay by the hour and others by the pound; in spooling, piece rates are paid according to the number of spools wound; in weaving, practically all mills pay by the linear yard. The rate per yard paid to a weaver varies primarily with the number of picks per inch in the fabric, the speed of the loom, and the number of looms operated. The foregoing are the principal factors affecting the weaving rates, but many smaller factors enter into the computation, such as the number of harnesses, number of colors in the filling, and the kind of filling.

In weaving woolen goods on broad looms a weaver usually attends but one loom. In weaving worsted goods a weaver generally attends two looms, but it often happens, especially where a fine fabric or a fabric difficult to weave is to be made, that he attends only one worsted loom. Automatic looms are used to some extent, principally on staple worsted fabrics, on which a weaver may attend six or more looms.

Earnings per hour, full time and actual hours of work per week, and full time and actual earnings per week for 1924 are presented in the appendix. (See Table 9, p. 117.) These data were compiled by the United States Bureau of Labor Statistics. Summaries are also shown for the years 1910 to 1914, 1916, 1918, 1920, 1922, and 1924. This biennial survey of wages and hours of labor for 1924 was made from pay rolls for periods in January, February, March, April, and May. Schedules were obtained from pay rolls of 72 representative establishments located in nine States.

[1] Ranging from 56 to 96 inches in width.

The following table shows the changes in hours and earnings from 1910 to 1924, using the figures for 1913 as the basis for the index number:

Index numbers of full-time hours per week, earnings per hour, and full-time earnings per week, 1910–1924

[Source: U. S. Bureau of Labor Statistics]

Year	Index numbers of average—			Year	Index numbers of average—		
	Full-time hours per week	Earnings per hour	Full-time weekly earnings		Full-time hours per week	Earnings per hour	Full-time weekly earnings
1910	101	90	91	1916	98	127	124
1911	102	91	92	1918	97	193	186
1912	100	102	102	1920	86	355	304
1913	100	100	100	1922	87	288	251
1914	98	103	100	1924	88	301	263

For the woolen and worsted industries the full-time weekly earnings in 1920 were more than three times the weekly earnings in 1913, but in 1922 there was a drop to about two and one-third times the earnings of 1913. This was caused by a reduction in wages of 22½ per cent, effective in most mills December 20, 1920. On April 30, 1923, a general increase of 12½ per cent was granted, which brought the full-time weekly earnings in 1924 to more than two and one-half times the earnings in 1913.

Changes in wage rates since January 1, 1923, were reported as follows: Of the 72 mills, 49 reported a 12½ per cent increase, 11 reported 10 per cent increase, one mill each reported 20, 12, 11, 9½, and 7½ per cent increases, respectively, and 7 mills reported no change. Overtime work was paid for at an increased rate of 50 per cent by 31 mills, 25 per cent by 9 mills, and 20 per cent by one mill. No increased rate was paid for overtime by 31 mills. Eleven mills reported paying 10 per cent, and one mill 15 per cent, higher wages for night work than for day work. Bonuses were paid by 36 mills to the employees in one or more occupations and were usually based on production. No bonuses were reported by 36 mills.

Average hours and earnings, by States.—The following table shows the number of woolen and worsted establishments, number of employees, average earnings per hour, average full-time hours per week, and average full-time earnings per week, by States, in 1924. It will be noted that the average earnings per hour ranged from $0.468 in New Hampshire to $0.595 in New Jersey.

Average hours and earnings, by States, 1924

[Source: Bulletin of the U. S. Bureau of Labor Statistics, No. 377]

State	Number of establishments	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week
Connecticut	9	1,698	49.0	$0.573	$28.08
Maine	12	2,242	49.5	.565	27.97
Massachusetts	11	16,891	48.0	.533	25.58
New Hampshire	5	3,585	52.8	.468	24.71
New Jersey	4	3,549	48.2	.595	28.68
New York	2	1,528	48.4	.507	24.54
Pennsylvania	18	4,448	51.7	.502	25.95
Rhode Island	9	4,917	48.0	.530	25.44
Vermont	2	2,764	49.5	.567	28.07
Total	72	41,622	49.1	.533	26.17

Wage increases.—Wages are governed largely by the scale in effect in the mills of the American Woolen Co., of Massachusetts. This corporation controls more than 60 mills in the United States. Its total machinery equipment in 1924 was approximately as follows: Woolen cards, 744; worsted cards, 405; combs, 414; woolen spindles, 313,158; worsted spindles, 490,614; twisting spindles, 22,785; broad looms, 10,586; narrow looms, 129. Approximately 40,700 persons were employed.

The following table, based on wage changes made by the American Woolen Co., was published in the October, 1925, Bulletin of the National Association of Wool Manufacturers:

Wages in the United States wool textile industry 1915–1925

Date	Changes in wage levels	Relative wage levels	Index[1] numbers, cost of living	Purchasing power of relative wages[2]
	Per cent			
Dec. 15, 1915		100.0	[3] 102	[3] 98
Jan. 1, 1916	5.9	105.9	108	98
Apr. 17, 1916	10.1	116.6	111	104
Dec. 4, 1916	9.9	128.2	121	106
May 1, 1917	9.2	140.0	130	108
Oct. 8, 1917	9.9	153.9	142	108
Mar. 25, 1918	10.4	169.9	149	114
June 17, 1918	10.0	186.8	164	114
June 2, 1919	18.2	221.0	176	126
Dec. 1, 1919	12.5	248.6	193	129
May 31, 1920	15.0	285.9	196	146
Dec. 20, 1920	[4] 22.5	221.6		
1921			160	138
Apr. 30, 1923	12.5	249.3		
1924			162	154
July 27, 1925	[4] 10.0	224.3	[5] 163	138

[1] Index numbers for cost of living are the average for the period during which each wage level was in force.
[2] The purchasing power of relative wages is the average for each period during which the then current wage level was in effect.
[3] Calendar year.
[4] Decrease.
[5] Estimated for the first 7 months of 1925 and for subsequent months.

A summary of the hourly earnings, full-time weekly earnings, and full-time hours per week from 1910 to 1924, inclusive, of the principal occupational groups in the woolen and worsted industries, is presented in Table 9 of the appendix. (See p. 117.) This table shows that the average full-time earnings per week of male employees in 1924 ranged

from $15.02 for doffers to $42.63 for loom fixers. For females the averages ranged from $15.15 for doffers to $31.98 for weavers. From 1910 to 1920 there was a steady decrease in full-time hours of employment, and from 1920 to 1924 the greater number of hands worked a 48-hour week.

COMPARISON OF AVERAGE EARNINGS OF OPERATIVES IN THE UNITED KINGDOM AND IN THE UNITED STATES

An inquiry by the Ministry of Labor into the average weekly earnings of textile workpeople in Great Britain and northern Ireland shows the following particulars in regard to each of four weeks in 1924, viz, the weeks ended January 19, April 12, July 12, and October 18.

Average earnings of woolen and worsted operatives in the United Kingdom, 1924[1]

Number of workpeople covered [2]	Average earnings in the week ended—				Average in the four weeks
	Jan. 19, 1924	Apr. 12, 1924	July 12, 1924	Oct. 18, 1924	
216,292	$8.60	$9.09	$8.94	$8.94	$8.89

[1] In the above and succeeding table the American currency figures are calculated from the average annual exchange rates as follows: One shilling equal to 24.3 cents in 1913, 19.3 cents in 1921, 22 cents in 1922, 22.8 cents in 1923, and 22 cents in 1924.
[2] Averages of the number employed in the four weeks.

Compared with an average weekly wage of $8.89 in the United Kingdom, the United States Bureau of Labor Statistics reported the average full-time weekly earnings of 41,622 workpeople in 72 woolen and worsted mills in the United States, in 1924, as $26.17 or an excess of 194 per cent over the British wage. In both countries a very high percentage of the employees worked a 48-hour week.

In order to ascertain the relationship of pre-war wages to those prevailing in 1924 in the United Kingdom, the American consulate at Bradford obtained from a large English woolen and worsted mill the data in the appended table.

Average weekly wages of weavers in a typical woolen and worsted mill in the United Kingdom, 1913–1924

Year	Weekly wage	Index number	Year	Weekly wage	Index number
1913	$6.80	100	1923	$12.31	181
1921	8.87	130	1924	10.34	152
1922	11.88	175			

The actual earnings of the mill's employees were averaged upon a weekly basis, for the years stated, from the mill's pay books, which were regularly audited. It may be noted that during the year 1913 the average weekly wage per weaver of woolen and worsted cloths, as paid by this mill on the piecework basis, was $6.80 and reached a maximum in 1923, when it was $12.31 or 81 per cent greater than during the pre-war year mentioned, while during 1924 it was $10.34 or but 52 per cent greater than in 1913.

In the American woolen and worsted mills the average weekly wage [4] for male and female weavers was $12.09 in 1913 and $33.33 in 1924, or an increase of 176 per cent.

PRICES OF DOMESTIC WOOLENS AND WORSTEDS

Woolen and worsted piece-goods prices follow, although usually about a year later, increases and decreases in raw-wool prices. For example, in 1916 both foreign and domestic wools rose in price; in 1917 piece goods showed a corresponding increase. The decline in the price of wool in 1921 was followed by a drop in piece-goods prices in 1922, and the rise in the price of wool during 1923 was reflected in the price of cloth in 1924.

To set forth the price relationship between raw wool and woolens and worsteds, a table has been prepared giving the average prices of 8 foreign and 8 domestic wools, and 41 staple numbers of woolens and worsteds. The grades of wool selected are considered the basic grades of the principal markets of the world, and are the principal ones used in the manufacture of fabrics for men's and women's clothing. The wools selected are as follows:

FOREIGN WOOLS	DOMESTIC WOOLS
Australian 64s–70s.	Fine staple territory.
Superior 12 months Cape.	Ohio de laine.
Australian 60s.	Half-blood territory combing.
Montevideo 60s.	Half-blood Ohio combing.
Australian 56s.	Three-eighths blood territory combing.
Montevideo 56s.	Three-eighths blood Ohio combing.
Australian 50s.	Quarter-blood territory.
Montevideo 50s.	Quarter-blood Ohio combing.

Table 18 in the Appendix (see p. 135) shows the prices of the various grades of domestic wools and the shrinkages figured. Table 19 (p. 135) shows the prices and shrinkages of the foreign wools. The wool quotations have been converted to a scoured basis, and all foreign wools include duties as levied under the various tariff acts.

The cloth prices given in the following table are the average prices of 41 staple domestic woolens and worsteds.[5] In order to obtain a proper comparison, the only kinds of cloth chosen were those of which the constructions have not varied to any appreciable extent since 1911. The prices of these cloths may be taken as indicators of price conditions throughout the 14-year period. Owing to style changes in women's fabrics it has been difficult to get many standard numbers for the 14-year period. It has been possible, however, to find several that have remained standard. The figures for the pre-war years 1911, 1912, and 1913 are consolidated into one simple average. The pre-war average for these three years is used as the base for all price tables.

[4] Bureau of Labor Statistics.
[5] For more complete details, see Table 20 in the appendix, p. 136.

Prices in the United States of foreign and domestic raw wools and domestic woolen and worsted piece goods and index numbers thereof, 1911–1924

Year	Domestic raw wools	Foreign raw wools	Woolens and worsteds	Index numbers			
				Domestic wools	Foreign wools	Wool cloths	Wages [1]
	Per pound	*Per pound*	*Per yard*				
1911, 1912, 1913	$0.5377	$0.6492	$1.2857	100	100	100	100
1914	.5273	.5288	1.1137	98	81	92	108
1915	.6789	.6539	1.1726	126	101	97	----------
1916	.7753	.7973	1.3412	144	123	111	127
1917	1.3496	1.3356	1.7801	251	206	148	----------
1918	1.5812	1.5186	2.7170	294	234	225	198
1919	1.4554	1.4345	2.5443	271	221	211	----------
1920	1.2396	1.2787	3.7407	231	197	310	356
1921	.6274	.5868	2.7182	117	92	225	----------
1922	.9692	1.1333	2.2459	180	175	186	268
1923	1.1459	1.1824	2.4157	213	182	200	----------
1924	1.1906	1.3174	2.5743	221	206	214	301

[1] Index numbers of average earnings per hour in woolen and worsted goods manufacturing. U. S. Bureau of Labor Statistics, Bulletin No. 377.

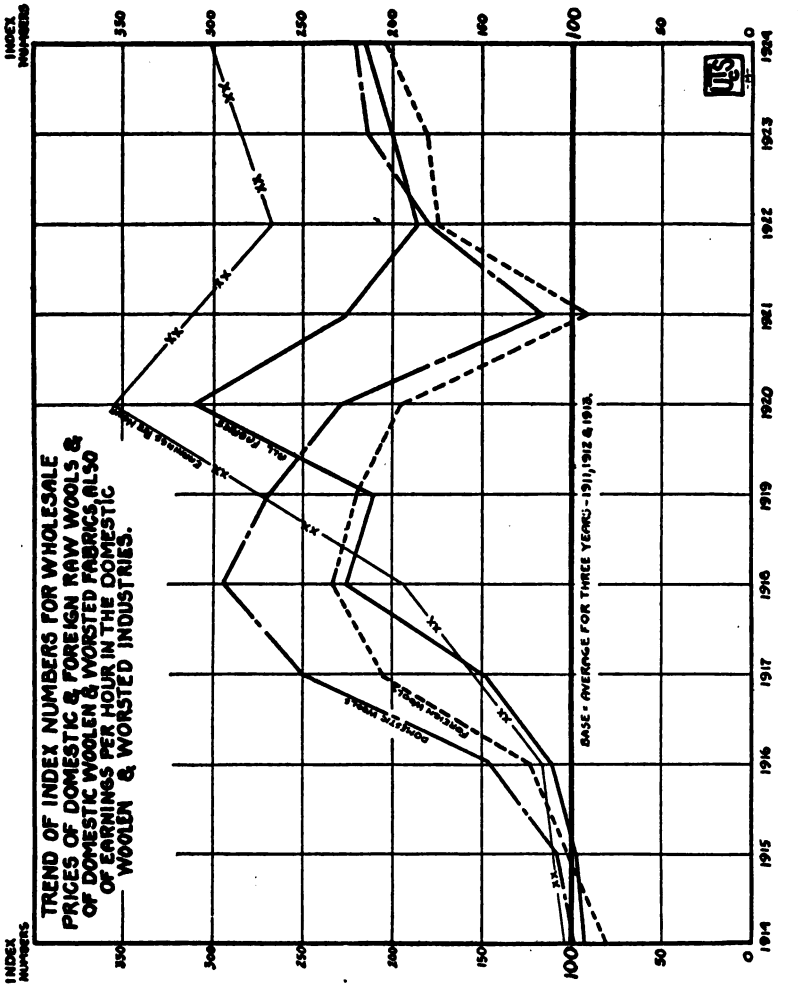
Taking as a base the average price of representative grades of domestic wool in 1911, 1912, and 1913, it will be found that the average price in 1924 was 121 per cent higher than this pre-war average. The average price at which imported wool, duty paid, was sold in Boston in 1924 was only 103 per cent higher than the pre-war average. The average price at which 41 staple fabrics were sold in New York in 1924 was 114 per cent higher than the 1911–1913 average. In the same period the United States Bureau of Labor Statistics records an increase of 201 per cent in the earnings per hour of operatives in the woolen and worsted industries.

The chart on page 55 shows the average wholesale prices, in Boston, of 8 domestic and 8 foreign wools; the average wholesale prices, in New York, of 41 domestic woolen and worsted fabrics; and the earnings per hour of operatives in the woolen and worsted industries of the United States from 1914 to 1924, inclusive.

COMPETITIVE CONDITIONS

Wool manufacturing is one of the most hazardous and precarious of the textile industries. The manufacturer of woolens and worsteds deals with an expensive and peculiar raw material. A greater degree of skill is required in buying wool than in selecting the raw material of any other textile fabric. Its preparation is also more difficult and the finish of its products is much more complicated. The manufacturer suffers constant loss in consequence of minor defects in fabrication. An entire cut of cloth will be thrown back on him in consequence of mispicks, threads out, or other defects due to careless weaving. The perils of the dyeing and finishing rooms are even greater. The dyeing of wool fabrics is, in Europe, a distinct art in itself. Some slight miscalculation in the combination of dyes or acids may weaken or depreciate the fabric and make it a "second." A piece-dyed fabric, perfectly woven and finished, may be slightly shaded from end to end, or side to side, which will cause the whole piece to be returned to the mill.

Manufacturers who market their products through commission houses find an obstacle to success in the prevailing terms of sale. These frequently compel the manufacturer to begin a season's business before he has received payment for goods of the previous season, and abundant capital is an absolute necessity. The accumulation of goods in commission houses, the cancellation of orders for



goods already manufactured or in process, the long credits, the carelessness of operatives, all combine to make conditions under which it is not surprising that many mills fail. It is not necessary to look beyond these conditions to find adequate explanation of the fact that the proportion of failures in the woolen and worsted industries is large. Financial mortality in the past has been high and there are no records to show the number of those who lost their entire capital but paid their obligations and quit. On September 4, 1924, the directors of the largest woolen and worsted manufactur-

ing corporation in the world (an American company) voted to pass the dividend on the common stock because it was unearned; in June, 1927, dividends on the preferred were omitted.

Failures of domestic manufacturers of woolens and worsteds, carpets, and wool knit goods recorded by R. G. Dun & Co. for the last seven years were as follows:

Year	Number	Liabilities	Year	Number	Liabilities
1920	18	$3,170,789	1924	63	$4,883,074
1921	38	1,836,218	1925	70	4,865,828
1922	51	2,890,278	1926	48	3,193,381
1923	42	2,013,042			

The requirements of fashion demand new patterns every season. A large fancy cassimere or fancy worsted mill will produce 500 to 1,000 distinct designs each season, adding greatly to the cost of manufacture. In some mills there are made not less than 50 distinct varieties or classes of fabrics, exclusive of styles. Success in this line of manufacture may therefore be said to depend upon a capacity to understand the popular taste, to anticipate its demands, often capricious, and to adapt the product of the mill to the requirements of the market. It sometimes happens that the entire output of a season is thrown back upon the manufacturer because of some failure of pattern or coloring to conform to the popular whim.

The liability of the American manufacturer to losses of this description is increased by the habit which prevails in the United States of following the trend of European fashions. As a rule, London sets the fashions in men's wear goods and Paris in women's wear goods. The American manufacturer, except the maker of plain and staple fabrics, is usually compelled to follow the styles determined in those cities if he expects to command the home trade. This is always a difficult and sometimes an impossible thing to do under the existing system which compels the styling of fabrics fully a year in advance of the season for which they are intended. The difficulty is increased by the survival of the prejudice, born in the early days of manufacture, in favor of foreign as against homemade woolens and worsteds. This prejudice is disappearing, but it is still a factor which must be recognized.

In England the system of sorting and classifying wools is such that the wool market is amply supplied with all the different sorts and classes. This wide range of choice constitutes an advantage for the English manufacturer. From the want of concentration of wool in our markets, and from other causes, the American manufacturer sorts his own wool and makes goods of various grades in order to utilize the entire fleece. It has followed that there has been less tendency on the part of the domestic mill to confine itself to single specialties. This is more particularly true of the woolen branch of the industry.

The facilities for technical education in wool manufacturing are superior in the manufacturing countries of Europe to those in the United States. Textile schools, supported wholly or in part by the Government, and equipped with the most skillful instructors and with every appliance, exist in Great Britain, Germany, France, Belgium, Austria, Italy, and Czechoslovakia. These schools turn out

annually large number of carefully trained young men who take their place in the factories where they supplement by practical experience the instruction they have received in every department of manufacture. The influence of these technically trained men upon the development of the textile industries of the countries in which they are located has been greater than is realized in this country, where the main dependence for the education of experts is upon the practical schooling received in the mills. Two textile schools in the United States (Lowell and Philadelphia), equipped to teach woolen and worsted manufacturing, have for many years supplied to a limited degree training somewhat similar to that furnished in foreign schools.

The mills abroad possess certain definite advantages growing out of the less mobile character of the operatives. It is common for an English workman in the textile industries to pass his entire working life in one mill at the same class of work. In the United States the factory population is constantly shifting, not only from mill to mill but from town to town and into different occupations; and there is increasing difficulty in obtaining and retaining properly trained help. These conditions naturally affect not only the economies of manufacture but also to a certain extent the quality and character of the products. There are certain lines of high-grade goods in which the American product does not regularly approach the fineness and perfection of finish peculiar to the goods of certain foreign mills, the workers in which have been exclusively employed on those particular lines for many years.

Costs of material are lower in foreign countries than in the United States, the differences in price of wool varying at different times from a half to a whole of the 31 cents a pound duty levied on clean wool. Foreign operatives receive lower wages than in this country, but the relative labor cost per yard or per pound here and abroad varies according to the type of fabric. The labor cost advantage of the foreign manufacturer is greatest in the fabrics carrying the largest percentage of labor, so it is found that the great bulk of our imports consists of fine and fancy goods, as these carry a higher percentage of labor than ordinary staples. Taxes are higher in Great Britain than in the United States, but salaries, interest, mill supplies, fuel, and power are lower. The first cost, for buildings and machinery, is also lower abroad.

The greatest asset of the domestic manufacturer of woolens and worsteds is the possession of a home market with a consuming power greater than that of any other nation. In times of prosperity in the United States the domestic manufacturer is not handicapped by the lack of an export trade, but when the home market is depressed it would be a source of strength if he could sell his fabrics abroad. In England, and to a lesser extent in France, Germany, Belgium, and Italy, the manufacturer of woolens and worsteds is not wholly dependent upon the conditions existing in his own country. His fabrics are sold in the markets of the world and these exports tend to stabilize production.

52344—27——5

CHAPTER 6

IMPORTS, EXPORTS, AND RATES OF DUTY

IMPORTS OF WOOLENS AND WORSTEDS

In the period 1860 to 1897, inclusive, the entered value of the imported woolen and worsted fabrics now covered by paragraphs 1108 and 1109 of the tariff act of 1922 seldom went below $20,000,000 per annum. During this 38-year period the annual value of these imports was more often above $30,000,000 than below, and in each of the fiscal years 1866, 1873, 1890, and 1896 the value of these imports was nearly $40,000,000. In the period from 1898 to 1926, inclusive, the annual value of the woolen and worsted fabrics imported into the United States exceeded $20,000,000 only in the fiscal year 1914 and in the calendar years 1923 to 1926 inclusive. The trend of imports during this period is illustrated by the chart on page 59.

The average annual imports for consumption of woolens and worsteds under the operation of the last five tariff acts, and imports in the calendar years 1923, 1924, 1925, and 1926 are found to compare as follows:

Total woolens and worsteds [1]—Imports for consumption—Average per year of 365 days, acts of 1890–1922

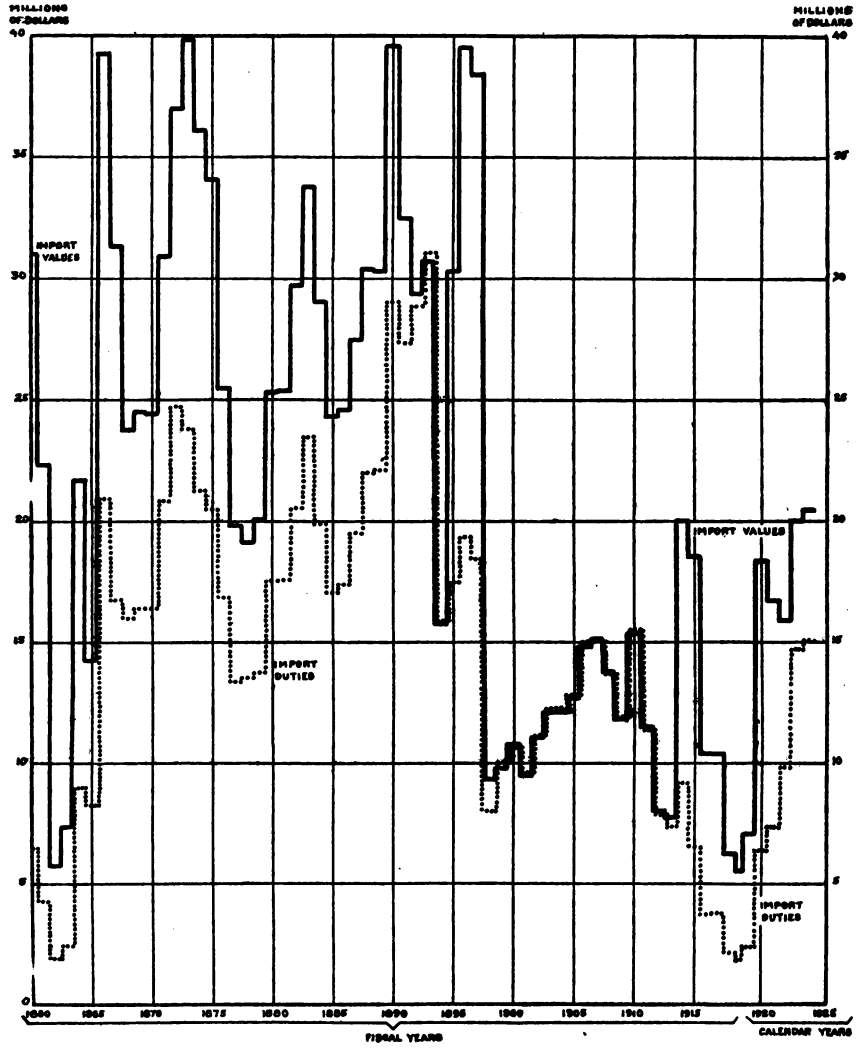
Tariff act of—	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate	Equivalent specific rate
	Pounds				*Per cent*	*Per pound*
1890		$22,719,445	$22,388,735		98.42	
1894		41,841,428	20,136,973		48.71	
1897		11,855,116	11,913,649		100.49	
1909		10,270,832	10,074,826		98.01	
1913	9,736,739	13,723,531	5,363,894	$1,409	39.09	$0.551
1922:						
Calendar year 1923	10,766,496	20,127,887	14,757,796	1.869	73.32	1.371
Calendar year 1924	11,350,314	20,481,672	15,069,683	1.804	73.53	1.327
Calendar year 1925	10,649,145	22,022,680	15,593,083	2.068	70.80	1.464
Calendar year 1926	10,468,151	21,180,044	14,990,238	2.023	71.25	1.442

[1] Total woven fabrics of wool, mohair, etc., such as are now dutiable under paragraphs 1108 and 1109 of the tariff act of 1922.

After the passage of the tariff act of 1913, which removed the duty on raw wool and the compensatory duties on manufactures of wool and imposed a duty of 35 per cent ad valorem on wool cloths and dress goods and 40 per cent on mohair fabrics, it was anticipated that there would be a large increase in the importation of foreign woolens and worsteds. The World War, however, began within seven months of the inauguration of the reduced duties and the abnormal conditions that ensued make it impossible to judge as to what would have been the effect under normal conditions.

Imports of woolens and worsteds were valued at $7,780,872 in the fiscal year 1913 and at $20,093,498 in the fiscal year 1914; the equivalent ad valorem rates of duty were 95.42 and 45.96 per cent, respectively. The act of 1913 became effective on wool and mohair fabrics January 1, 1914. For the last six months under the act of 1909

(July 1 to December 31, 1913), imports were valued at $3,722,158, dutiable at 93.12 per cent; and for the first six months under the act of 1913 they were valued at $16,371,340, dutiable at 35.24 per cent. The decreased rate of duty permitted the entry of goods of the cheaper grades, such as low-grade serges and cotton-warp woolens and worsteds, which had previously not been imported to any extent.



Imports of woolens and worsted—Revenue, 1860–1925

Fabrics weighing over 4 ounces per square yard were valued at $1.17 per pound during the last six months of the act of 1909 (July 1 to December 31, 1913), and at $1.02 per pound for the first six months under the act of 1913; in the fiscal year 1915 similar imports were valued at 93 cents per pound.

The imports entered under paragraphs 1108 and 1109 in the calendar year 1925 were distributed as follows:

Woven fabrics of wool—Import classifications in 1925

Classification	Quantity		Value
Woolens:			
Of wool and other [1] hair—	*Sq. yds.*	*Pounds*	
Not over 4 ounces per square yard	954,462	179,537	$629,676
With warp of cotton	3,536,016	766,696	1,535,296
Over 4 ounces per square yard	14,755,705	8,824,789	17,379,318
Total woolens	19,247,183	9,771,022	19,544,284
Worsteds:			
Of wool and other [1] hair—			
Not over 4 ounces per square yard	80,778	16,974	45,182
With warp of cotton	61,729	15,990	32,052
Over 4 ounces per square yard	1,445,241	734,511	2,153,406
Of mohair—			
Not over 4 ounces per square yard	19,836	4,338	12,482
With warp of cotton	400,317	87,039	193,055
Over 4 ounces per square yard	49,667	19,271	42,219
Total worsteds	2,057,568	878,123	2,478,396
Grand total	21,304,751	10,649,145	22,022,680

[1] Hair, such as alpaca, etc., other than mohair.

Details as to the unit weight, unit value, and relative importance of imports under the above classifications are shown as follows:

Woven fabrics of wool—Details relative to import classifications in 1925

Classification	Average weight per square yard	Average value		Relation to total—		
				Square yards	Pounds	Value
Woolens:						
Of wool and other [1] hair—	*Ounces*	*Per sq. yd.*	*Per pound*	*Per cent*	*Per cent*	*Per cent*
Not over 4 ounces per square yard	3.01	$0.66	$3.51	4.48	1.68	2.86
With warp of cotton	3.47	.43	2.00	16.60	7.20	6.97
Over 4 ounces per square yard	9.57	1.18	1.97	69.26	82.87	78.92
Total woolens	8.12	1.02	2.00	90.34	91.75	88.75
Worsteds:						
Of wool and other [1] hair—						
Not over 4 ounces per square yard	3.36	0.56	2.66	.38	.16	.20
With warp of cotton	4.14	.52	2.00	.29	.15	.14
Over 4 ounces per square yard	8.13	1.49	2.93	6.78	6.90	9.78
Of mohair—						
Not over 4 ounces per square yard	3.50	.63	2.88	.10	.04	.06
With warp of cotton	3.48	.48	2.22	1.88	.82	.88
Over 4 ounces per square yard	6.21	.85	2.19	.23	.18	.19
Total worsteds	6.83	1.20	2.82	9.66	8.25	11.25
Grand total	8.00	1.03	2.07	100.00	100.00	100.00

[1] Hair, such as alpaca, etc., other than mohair.

As the tariff act of 1922 classifies woven fabrics of wool according to weight, tables of imports have been prepared on the weight basis. Table 13 in the appendix (p. 123) shows the total imports of woolens and worsteds from October 6, 1890, to December 31, 1926, including those listed in Table 14, weighing not over four ounces per square yard, and those listed in Table 15, weighing over four ounces per

square yard. These fabrics were classified under former tariff acts as follows: Those weighing not over four ounces per square yard were (a) dress goods, etc., of wool, mohair, alpaca, etc.; (b) dress goods, etc., made with a cotton warp; (c) dress goods, etc., all-wool and cotton-warp; (d) woven fabrics of mohair, alpaca, etc.; and (e) flannels. Those weighing over four ounces per square yard were (a) cloths, woolen or worsted; (b) dress goods of wool, mohair, alpaca, etc.; (c) dress goods made with cotton warp; (d) blankets over three yards in length; and (e) flannels.

Cloths, woolen or worsted.[6]—Cloth is the term usually applied to woven fabrics of wool destined for men's suits and overcoats, and for women's cloaks and sport apparel. Ordinarily, cloths are heavier, firmer, and stronger than dress goods and without the draping quality of the last mentioned. They are of two general classes, (1) woolen, woven of carded yarns, and (2) worsted, woven of combed yarns. Typical woolens are cassimeres, tweeds, cheviots, meltons, kerseys, friezes, mackinaws, and billiard cloths. Typical worsteds are clays, serges, and fancy worsted suitings for men's wear; and light weight serges, poiret twills, and poplins for women's wear.

The tendency, in the last 30 years, has been to decrease the weight of both woolen and worsted cloths. Heavy-weight suitings in former times were made to weigh 18 to 22 ounces whereas in postwar years 12 to 14 ounces per linear yard 56 inches wide are the prevailing weights. Coincidentally, the heavier underclothing of former years has been displaced by lighter weights, summer weights being worn by many throughout the year. The more complete heating of buildings, street and railway cars has brought about a marked change in the clothing habits of the American people, heavier overcoatings, however, offsetting the lighter weight suitings.

Imports of woven fabrics of wool classified in the customs as "cloths" under the last five tariff acts are not comparable. Under the act of 1890 fabrics designated as cloths were only men's wear woolens and worsteds weighing more than 4 ounces per square yard. Under the act of 1894 cloths were considered to be any wool fabric, for either men's or women's wear, not made with a cotton warp. Under the acts of 1897 and 1909, cloths were assumed to be men's wear fabrics only, and did not include dress goods weighing over 4 ounces per square yard, as these were provided for in separate paragraphs. Under the act of 1913 all fabrics weighing more than four ounces per square yard, excluding those made of mohair, were classified as cloths. The tariff act of 1922 classifies woven fabrics of wool according to weight, and as all "cloths" in the prior tariff acts weighed more than 4 ounces per square yard tables have been prepared showing imports classified on the weight basis. These are strictly comparable with fabrics entered under paragraph 1109 of the tariff act of 1922. Table 15 (p. 128), shows the quantity, value, and duty collected on woven fabrics of wool weighing over 4 ounces per square yard, imported from October 6, 1890, to December 31, 1926. This table includes (a) cloths, woolen or worsted; (b) dress goods weighing over 4 ounces per square yard of wool, mohair, alpaca, etc.; (c) dress goods weighing over 4 ounces per square yard made with cotton

[6] In the cotton industry the word "cloth" is used as a general term for all woven fabrics in the piece over twelve inches in width, but in the wool industry it is used in a more restricted sense, in contradistinction to dress goods.

warp; (d) blankets over three yards in length, separately recorded under the tariff acts of 1894, 1897 and 1909; and (e) flannels weighing over 4 ounces per square yard. The average annual imports for consumption of woven fabrics of wool, weighing over 4 ounces per square yard, under the last five tariff acts and imports in the calendar years 1923, 1924, 1925, and 1926 were as follows:

Woven fabrics of wool mohair, etc., weighing over 4 ounces per square yard—Imports for consumption—Average per year of 365 days, acts of 1890–1922

Tariff act of—	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate	Equivalent specific rate
	Pounds				*Per cent*	*Per pound*
1890	15,269,171	$14,264,782	$13,889,796	$0.925	97.33	$0.903
1894	35,155,669	21,655,929	10,423,263	.616	48.13	.296
1897	6,816,062	6,704,457	6,659,553	.984	99.29	.976
1909	6,472,836	6,788,291	6,554,462	1.049	96.49	1.013
1913	6,586,529	9,703,217	3,832,442	1.473	39.50	.582
1922:						
Calendar year 1923	9,911,042	18,510,632	13,634,501	1.868	73.66	1.376
Calendar year 1924	10,297,500	18,429,720	13,642,449	1.790	74.02	1.325
Calendar year 1925	9,578,571	19,574,943	13,985,939	2.044	71.35	1.458
Calendar year 1926	9,461,071	18,974,921	13,606,498	2.006	71.70	1.438

Prior to the fiscal year 1916, woolen and worsted cloths were not separately classified. The export statistics of the United Kingdom, however, show that from 1901 to 1918, inclusive, the quantity of worsteds exported to the United States greatly exceeded that of woolens. From July 1, 1915, to September 21, 1922, wool cloths were classified in American import statistics as woolens and worsteds and each was subdivided into plain and fancy woven. During this period, as shown by the record, the value of woolens was approximately 80 per cent and worsteds only 20 per cent of the total. A study of imports raises some doubt as to the accuracy of these figures.[7] In 1921, for instance, the import records show woolen cloths valued at $10,199,117, and worsted cloths at $2,098,400, or 83 per cent woolens and 17 per cent worsteds, whereas for the same year statistics of the United Kingdom showed exports to the United States of woolens valued at £1,953,314, and worsteds at £1,419,034, or 58 per cent woolens and 42 per cent worsteds. The latter figures are probably more accurate. Woolens and worsteds were again separately classified in 1924; the recorded statistics show that of the total imports under paragraphs 1108 and 1109, approximately one-half of 1 per cent of the value were mohair fabrics, 9.5 per cent worsteds, and 90 per cent woolens. Inquiries made in the trade and at the appraiser's stores in New York disclosed that in reality a much larger percentage of the total value of imports are worsteds.

Imports of wool cloth weighing over 4 ounces per square yard are mainly the finer grades of woolen overcoatings and suitings, fancy worsted suitings, novelty dress goods, and costume cloths. The following data show details of some typical imports under paragraph 1109 in 1924:

[7] The apparent inaccuracy of the previous division between woolens and worsteds appears to have been due to its being based on the wording of the invoices rather than on a careful examination of the fabrics themselves. A large number of the invoices contain the general wording "wool goods" or "wool fabrics," and these appear to have been recorded as woolens although such general terms are applicable to either woolens or worsteds. It is probable that a considerable amount of worsteds were thus statistically recorded as woolens.

Typical imports of wool cloths in 1924

Fabric	Width	Weight per linear yard	Net invoice price	Equivalent ad valorem rate	Source
	Inches	*Ounces*	*Per yard*	*Per cent*	
Melton overcoating	56	35	$3.97½	74	United Kingdom.
Plaid back overcoating	54	31	1.15	112	Do.
Woolen suiting	56	14	1.26	81	Do.
Do	56	15	2.39	68	Do.
Do	56	14	.82	98	Do.
Do	56	15	2.52	67	Do.
Do	56	12	1.15	79	Do.
Tweed	56	17	1.94	74	Do.
Do	56	14	2.60	65	Do.
Do	54	12	.82	92	Do.
Flannel suiting	56	14	2.38	66	Do.
Do	57	12	1.83	68	Do.
Costume cloth	54	17	3.81	62½	Do.
Ladies suede cloth	55	10	.96	78	France.
Plaid back overcoating	56	36	3.56	80	Germany.

An analysis of imports of woven fabrics of wool weighing more than 4 ounces per square yard shows that under acts carrying a compound duty imports were almost wholly confined to those of the highest grade. Imports entered under the lower value classifications were negligible. Under the act of 1890, 98 per cent of the quantity of wool cloths imported were entered under the highest value bracket, i. e., those valued at more than 40 cents per pound. These paid an equivalent ad valorem rate of duty of 97 per cent, as compared with 145 per cent on those valued at from 30 to 40 cents per pound, and 163 per cent on those valued at not more than 30 cents per pound. Approximately 90 per cent of the quantity of wool cloths imported under the tariff acts of 1897 and 1909 were valued at more than 70 cents per pound. These paid an equivalent ad valorem rate of duty of 95 per cent, as compared with 123 per cent on those valued at over 40 cents but not over 70 cents per pound, and 140 per cent on those valued at not over 40 cents per pound. The equivalent ad valorem rates of duty on the various value classifications of paragraph 1109 of the tariff act of 1922 are somewhat more evenly adjusted than under former acts which carried a compound duty. However, imports of wool cloths from September 22, 1922, to December 31, 1926, were largely those of the highest grade; 92 per cent of the quantity were valued at more than 80 cents per pound, 4 per cent were valued at more than 60 cents but not more than 80 cents per pound, and 4 per cent were valued at not over 60 cents per pound. The equivalent ad valorem rate of duty of the latter classifications was 72.10, 101.86, and 84.59 per cent, respectively.

The simple ad valorem rates of 40 and 50 per cent imposed on wool cloths by the act of 1894 permitted the importation of fabrics of the medium and lower grades. Thirty-seven per cent of the cloths imported under this act were valued at not more than 50 cents per pound. The average value of these per pound was 31 cents, as compared with 80 cents for those valued at more than 50 cents per pound. Under the ad valorem duties of 35 per cent on wool fabrics and 40 per cent on mohair cloths, imposed by the act of 1913, the cheaper grades were again imported.

The following table shows the total quantity, average value per pound, per cent of total quantity by value classifications, and equivalent ad valorem rates of duty on cloths imported from October 6, 1890, to December 31, 1926

Imports of cloths, woolen or worsted, by value classifications [1]

	Total quantity	Average value per pound	Per cent of total quantity	Equivalent ad valorem rate
Act of 1890:	*Pounds*			*Per cent*
Valued not over 30 cents per pound	114,742	$0.267	0.25	163.20
Valued over 30 cents, not over 40 cents per pound	965,667	.388	2.15	144.51
Valued over 40 cents per pound	43,817,435	.927	97.59	97.45
Average per year	19,598,281	.913	100.00	97.91
Act of 1894:				
Valued not over 50 cents per pound	23,196,201	.310	37.62	62.00
Valued over 50 cents per pound	56,490,426	.795	62.38	59.00
Average per year	34,970,871	.616	100.00	48.13
Acts of 1897 and 1909:				
Valued not over 40 cents per pound	450,426	.265	.68	148.20
Valued over 40 cents, not over 70 cents per pound	6,966,047	.570	2.79	122.65
Valued over 70 cents per pound	63,749,296	1.105	96.53	94.79
Average per year	4,327,088	1.052	100.00	96.47
Act of 1913	55,638,655	1.465	100.00	[2] 39.69
Average per year	6,374,171	1.465	100.00	39.69
Act of 1922 (Sept. 22, 1922, to Dec. 31, 1926):				
Valued not over 60 cents per pound	1,698,393	.538	4.16	84.59
Valued over 60 cents, not over 80 cents per pound	1,508,273	.713	3.70	101.86
Valued over 80 cents per pound	37,603,558	2.036	92.14	72.10
Average per year	9,536,320	1.925	100.00	72.65

[1] Includes cloths of mohair, except under act of 1913.
[2] Not straight 35 per cent because of the additional duties imposed by the emergency tariff act.

Dress goods.— Dress goods, in the trade, are fabrics for women's wear, exclusive of the heavier fabrics known as cloakings or costume cloths. Usually both woolen and worsted dress goods are lighter in weight than the corresponding fabrics for men's wear. The fabrics classified in the customs as dress goods under the various tariff acts are of many kinds. Under the acts of 1890, 1897, and 1909, imports so recorded included all fabrics destined for women's and children's wear made of wool, mohair, alpaca, etc., either all wool, union, or cotton warp, and weighing under or over 4 ounces per square yard. Imports classified as dress goods during the period of the act of 1894 were only light-weight fabrics for women's or children's wear, made with cotton warp. Under the act of 1913 all fabrics weighing not more than 4 ounces per square yard were classified in the import statistics as dress goods. These included fine flannels for infant's wear, fine flannel shirtings, and cotton-warp fabrics for men's summer suitings. Italian cloths, specially mentioned in certain tariff acts, are high-grade sateen-woven linings, generally made with a cotton warp and a merino (wool and cotton mixed) filling. Wool bunting is a light-weight, loosely woven fabric intended for flags, decorations, etc., and is usually made of worsted yarns.

The tariff acts of 1890, 1897, and 1909 stipulated that dress goods weighing over 4 ounces per square yard should be dutiable at the

same rate as cloths, except that in the act of 1909 cotton-warp dress goods weighing over 4 ounces per square yard were dutiable at 5 per cent less than the rate provided for cloths. Prior to the act of 1913, imports recorded as dress goods included fabrics made of mohair, alpaca, etc.; after January 1, 1914, these fabrics were separately classified. Imports of fabrics such as tricotines, poiret twills, whipcords, broadcloths, and velours, known in the trade as dress goods, were all classified as cloths during the period of the tariff act of 1913.

Paragraph 1108 of the tariff act of 1922 covers woven fabrics of wool, weighing not over 4 ounces per squard yard. Tables have been prepared showing imports under the last five tariff acts, classified according to weight, which are comparable with imports dutiable under the above paragraph. Table 14, page 124, shows imports for consumption of woven fabrics of wool weighing not over 4 ounces per square yard from October 6, 1890, to December 31, 1926. This table includes (*a*) dress goods of wool, mohair, alpaca, etc.; (*b*) dress goods made with cotton warp; (*c*) dress goods, all wool and cotton warp; (*d*) woven fabrics of mohair and alpaca; and (*e*) flannels weighing not over 4 ounces per square yard. The average annual imports for consumption under the last five tariff acts, and imports in the calendar years 1923, 1924, 1925, and 1926 were as follows:

Woven fabrics of wool, mohair, etc., weighing not over 4 ounces per square yard—Imports for consumption—Average per year of 365 days, acts of 1890–1922

Tariff act of—	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate	Equivalent specific rate
	Pounds				*Per cent*	*Per pound*
1890		$8,454,653	$8,718,962		103.13	
1894		19,685,499	9,713,710		49.34	
1897	[1] 28,582,740	5,150,659	5,263,096	$0.180	102.18	[2] $0.184
1909	[1] 18,576,461	3,486,651	3,520,373	.188	100.97	[2] .190
1913	3,148,210	4,020,306	1,531,452	1.277	38.09	.486
1922:						
Calendar year 1923	855,454	1,617,255	1,123,297	1.891	69.46	1.313
Calendar year 1924	1,052,814	2,051,952	1,417,234	1.949	69.07	1.346
Calendar year 1925	1,070,574	2,447,737	1,627,153	2.286	66.48	1.520
Calendar year 1926	1,007,080	2,205,123	1,484,745	2.190	67.33	1.474

[1] Square yards. [2] Per square yard.

Wool flannel.—Wool flannel is a light and loosely woven fabric, composed wholly or in chief value of wool, having a certain soft finish, the texture being practically the same as when it leaves the loom. Originally it was, and generally it still is, a woolen rather than a worsted fabric. Recently, worsted yarns spun on the French system have been employed to a limited extent in its manufacture. The varieties of flannel are numerous. The chief categories are flannels for underwear, flannels for shirtings, and flannels for outer garments for both men's and women's wear; and within each category the range of quality is wide.

Flannels for underwear were the only kind mentioned in the tariff laws of 1890, 1894, 1897, and 1909. The special rate, lower than that on cloths and dress goods, applied only to "flannels for underwear." This phraseology was altered in the tariff act of 1913 to read merely "flannel." The tariff act of 1922 makes no mention of flannels, and

imports are dutiable at the rates applicable to other woven fabrics of wool, according to weight.

The old type of flannel for underwear, now seldom made, is the lowest grade and the simplest to manufacture. The white flannel for babies' underwear, which is still produced on a considerable scale, is one of the finest of wool fabrics. There are also coarse, low-grade shirtings; fine, silk-mixture shirtings; a shoddy flannel fabric for outer wear; and fine, white trousering or flannel dress goods competing with the best product of the English industry. It may be stated, however, that as separate classes only flannels for underwear and flannels for shirtings can be identified with any considerable degree of definiteness. A person acquainted with the trade would recognize them readily. The other variety, flannels for outerwear, is not well defined; its delimitations are not clear, especially as to when "a flannel ceases to be a flannel" and becomes a piece of dress goods; the designation of a specific fabric of this type as a flannel would depend largely upon the person inspecting it.

Flannels were among the first woolen fabrics made in this country, and were long an essential product of our wool manufacture. They were generally the coarser qualities for underwear and shirtings. In the pre-war period the yearly output of flannels coming under these heads averaged about 20,000,000 square yards, valued at from $3,500,000 to $4,000,000. In 1919 all-wool and cotton-mixed flannels for underwear, and domet flannels and shirtings, amounted to 30,455,120 square yards, valued at $18,666,292; in 1921 the production fell to 9,000,825 square yards, valued at $4,728,631; and in 1923 the output rose to 12,774,816 square yards, valued at $6,351,096. The cotton-mixed and domet flannels accounted for the entire decline. In addition there was the production of flannels for outer garments which has in later years grown to considerable importance, but for which precise figures are not available.

The domestic production of flannels for underwear and shirtings for which alone figures are available, declined heavily between 1889 and 1899; from 61,195,501 square yards to 20,096,827 square yards, or 67 per cent. The major portion of the decline probably came in underwear flannel. In the decade between 1899 and 1909 the quantity of shirting flannel produced remained practically constant, whereas the quantity of flannel for underwear decreased from 15,541,814 to 10,919,925 square yards, or 30 per cent. The decline in the latter was caused by the invasion of knitted goods and of woven cotton goods into the underwear field previously monopolized by flannels. The causes of this movement are the greater prevalence of well-heated houses, street and railway cars, etc., and the superior fit to be obtained with undergarments made of a knitted fabric. The contrary movement in knit goods is reflected in the statistics of production of knit underwear. For example, between 1899 and 1914 the total quantity produced increased from 16,860,555 dozen garments (shirts, drawers, and union suits) to 28,031,290 dozen, or by 66 per cent; in 1923, 23,492,510 dozen garments were produced. The proportion of cotton goods in this production increased from 76 per cent in 1899 to 89 per cent in 1923. During the period 1899 to 1923 the production of flannels for underwear fell 57 per cent.

The following table, based on the census figures for 1923, shows the average weight and value of flannels for underwear, all-wool and cotton-mixed, and domet flannels and shirtings.

Wool flannel	Weight per square yard	Value	
		Per square yard	Per pound
Flannels for underwear:	*Ounces*		
All wool	7.804	$0.745	$1.528
Cotton mixed	4.869	.433	1.422
Domet flannels and shirtings	7.423	.421	.908

Imports of "flannels for underwear" under the tariffs of 1897 and 1909 were very small as compared with the domestic production. The average annual value of flannels, of the type brought in during the years 1905 to 1909, was considerably less than 3 per cent of the value of the domestic production in 1909. The quantity brought in during the succeeding years, 1910–1913, averaged in value 5½ per cent of the domestic output of underwear flannels in 1914. The increase in percentage was in part due to an increase in imports and in part to a decrease in domestic production. The inclusion in the import figures, after 1913, of types of flannel other than for underwear makes impossible similar comparisons for 1919. The imports of all types in that year amounted in value to somewhat less than seven-tenths of 1 per cent of the 1919 production, while for the period 1915–1921 they averaged slightly less than 2 per cent of the 1919 production.

Another feature of the import trade under the acts of 1897 and 1909 was the rate of duty imposed by the tariff on flannels of medium and low grade. Of those valued at less than 50 cents per pound, the importations did not exceed a hundred pounds, or a few hundred square yards. Somewhat greater quantities came in at 50 to 70 cents per pound; but by far the largest proportion of the imports was entered at the highest classification—valued at over 70 cents per pound. The equivalent ad valorem rates paid by the latter, weighing over 4 ounces per square yard, averaged 104 per cent. On a few of the classes that did not come in to any extent the rates reached 143 per cent.

It should be noted that the value per unit of flannels for which imports were considerable compared very favorably with the value of the dress goods imported. In the years 1910–1913 imported dress goods weighing less than 4 ounces per square yard averaged 18.75 cents per square yard, and dress goods weighing over 4 ounces per square yard averaged 91.7 cents per pound. The bulk of the flannels imported, as stated above, were valued at over 70 cents per pound. On this basis it would seem certain that only superior qualities of underwear flannels were imported. It is worthy of note that the importation of flannels of the higher qualities, of which our purchases abroad had until then almost entirely consisted, showed no such extraordinary increase after the imposition of the lower duties in 1914 as did the imports of most wool manufactures, especially when it is borne in mind that the scope of the flannel paragraph in the act of 1913 was greatly extended by a change in phraseology,

i. e., to include all flannels. . Imports of flannels valued at over 50 cents per pound increased, despite the broadening of the basis, from an average of approximately $109,000 for 1910–1913 to only $144,219 in 1914; whereas cloths increased from an average of $5,164,287 for 1910–1913 to $12,023,807 in 1914.

A marked increase in imports of the cheaper qualities of flannels, however, did take place. Under the previous tariffs, as above noted, the importations had been negligible, but in the latter half of the fiscal year 1914 over 50,000 pounds were brought in. These were probably shoddy flannels for underwear and shirtings, attracted by the comparatively low rate of duty (25 per cent ad valorem).

In the calendar year 1920 imports of wool flannels amounted to 337,692 pounds, valued at $780,820. Of this import only 2,975 pounds were valued at less than 50 cents per pound. Following the enactment of the emergency tariff law on May 27, 1921—which levied a duty of 45 cents per pound, in addition to the rates under the act of 1913, on all manufactures of wool—imports of flannels fell off sharply, and judging from the marked increase in value per pound were confined to the highest grades. Thus, during the period January 1 to May 27, 1921, inclusive, imports of flannels amounted to 370,575 pounds, with an average unit value of $1.54, whereas for the remainder of the calendar year they amounted to only 107,470 pounds but had an average value of $2.19 per pound. From January 1 to September 22, 1922, imports included only 296 pounds valued at less than 50 cents per pound, but 220,145 pounds, valued at more than 50 cents per pound; the average value per unit of the total, including both classes, was $1.99.

In the tariffs prior to 1922 lower duties were imposed on flannels than on cloths and dress goods, on the theory that flannels are essential to one's warmth during the day as blankets are at night; that they were in universal use as articles of comfort and necessity and so were particularly entitled to lower duties.

The omission of the word "flannel" from the tariff act of 1922 stops litigation as to what is or is not "flannel" and permits such goods to enter on a parity with other woven fabrics of wool under paragraph 1108 or 1109, according to weight. Imports of flannels weighing not over 4 ounces per square yard, entered under the tariff acts of 1890, 1894, 1897, and 1909, will be found in Table 14e, page 127. Flannels weighing over 4 ounces per square yard, imported from October 6, 1890, to September 22, 1922, will be found in Table 15c, page 131.

Fabrics of mohair, alpaca, etc.—Mohair is the long, silky hair of the Angora goat, native to the mountainous interior of Asia Minor. The center of the district is Angora, now the capital of Turkey, about 220 miles from Constantinople.

Until recent times almost the entire supply of mohair was obtained from Constantinople. For some time all attempts to acclimatize the Angora goat elsewhere proved unsuccessful. When the goat was removed from its native mountains, its fiber deteriorated and lost its distinctive features. Mohair production is now, however, successful in South Africa, Australia, and the United States. The best mohair still comes from Constantinople and is called Turkey mohair, though by far the largest quantity imported into the United States comes from South Africa.

The mohair fiber is soft, silky, white, and lustrous; 12 months' growth is from 6 to 12 inches in length. The mohair from the southwestern part of the United States is usually shorter, as the goats are sheared twice a year. If this is not done, the goats shed their hair because of the warm climate. The average weight of an Angora fleece is about three pounds—much less than the average weight of the fleece of a sheep.

Although American imports of mohair originate almost entirely in South Africa and Turkey, a considerable proportion comes by way of England and in import statistics is credited to that country.

Imports for consumption of "hair of the Angora goat, alpaca, and other like animals" averaged, per year of 365 days, 1,953,007 pounds under the act of 1909 and 6,061,939 pounds under the act of 1913. The bulk of these imports consisted of hair of the Angora goat; that is, mohair, but this item was not listed separately prior to the act of 1922. In the calendar year 1925 imports of mohair amounted to 1,783,994 pounds in the condition imported, with equivalent clean content of 1,329,952 pounds. The domestic production of mohair in 1925 is estimated to have been about 10,661,000 pounds. Domestic mohair is stated, by manufacturers, to be inferior in luster and in spinning qualities to the Turkey mohair but to have been improved in length and in quality during recent years.

Mohair fabrics are usually made with a cotton warp. Imports dutiable under paragraphs 1108 and 1109 are mainly coat linings, but also include dress goods, summer suitings, and automobile-top fabrics. (For information as to plush, the main fabric made of mohair, see Part 2, Pile fabrics.)

Hair of alpaca, llama, and vicuna.—Alpaca fiber is grown on the animal of that name. It is superior to mohair in strength, flexibility, and fineness of texture. The fiber is 10 to 16 inches in length. The reddish-brown hair is more valuable than the white hair. Production is limited exclusively to the Andean highlands of Peru, Bolivia, and Chili. Arquipa, the center of activity in the alpaca market, is located on the southern railway of Peru at an altitude of about 8,000 feet.

The alpaca, although closely related to the llama, with which it interbreeds freely, differs from it in bodily structure and in the character of its fleece. The alpaca is smaller than the llama, rarely attaining a height of 3 feet, its limbs are more slender, and its neck longer. It is customary to shear the alpaca every second year, but it has been found that the fiber continues to grow for a longer period, and that it would probably be profitable to shear only every third year. The present yield averages about 10 to 15 pounds per animal every second year.

Vicuna is a fine soft fiber, reddish brown in color; it resembles alpaca but is shorter and softer. Llama hair also resembles alpaca but is coarse and short. The uses of these hairs are similar to the uses of mohair. The average annual importation of alpaca is about 1,000,000 pounds; very little llama or vicuna finds its way to this country.

Woven fabrics made in chief value of mohair, alpaca, etc., were first separately classified under the tariff act of 1913 when they were made dutiable at a higher rate than similar fabrics made of wool. Under the act of 1913 wool was entered free of duty, but the hair of

the Angora goat, alpaca, and other like animals was dutiable at 15 per cent ad valorem, tops made thereof at 20 per cent, yarns at 25 per cent, and woven fabrics at 40 per cent. Under all other tariff acts these fibers and manufactures thereof were dutiable at the rates levied on wool and wool manufactures.

The average annual imports under the act of 1913 of fabrics made of mohair, alpaca, llama, and vicuna, amounted to 697,727 pounds, valued at $1,015,602. The unit weight of these fabrics was not recorded in import statistics, but they are known to have been mainly lightweight linings made with cotton warp, and to have been mainly of English origin. As shown in Table 14d, page 127, imports of woven fabrics of mohair, alpaca, llama, and vicuna, were not recorded prior to the act of 1913. The unit value was $1.456 per pound; the equivalent ad valorem rate of duty was 42.62 per cent. The years of largest importation were 1915 and 1916, with 1,198,319 and 1,136,602 pounds, respectively; 1919, with only 152,835 pounds, was the year of the smallest importation.

Under the act of 1922 imports of fabrics wholly or in chief value of mohair are separately recorded but imports of fabrics of alpaca, llama, and vicuna are included, without separate mention, with imports of fabrics made of wool. Because of this change in statistical tabulation it is not possible to compare imports of the above-mentioned fabrics under the acts of 1913 and 1922. As shown in Table 14d, imports in 1925 of fabrics wholly or in chief value of mohair amounted to 91,377 pounds, valued at $205,537. The unit value was $2.25 per pound; the equivalent ad valorem rate of duty was 66.19 per cent.

The mohair and alpaca linings made in Great Britain are preferred by some domestic manufacturers and tailors of high-grade clothing. In these fabrics the element of style is almost wholly lacking and sales must therefore depend upon quality and finish. Imports under the act of 1922 are almost entirely of the better grades.

COMPARISON OF IMPORTS WITH DOMESTIC PRODUCTION

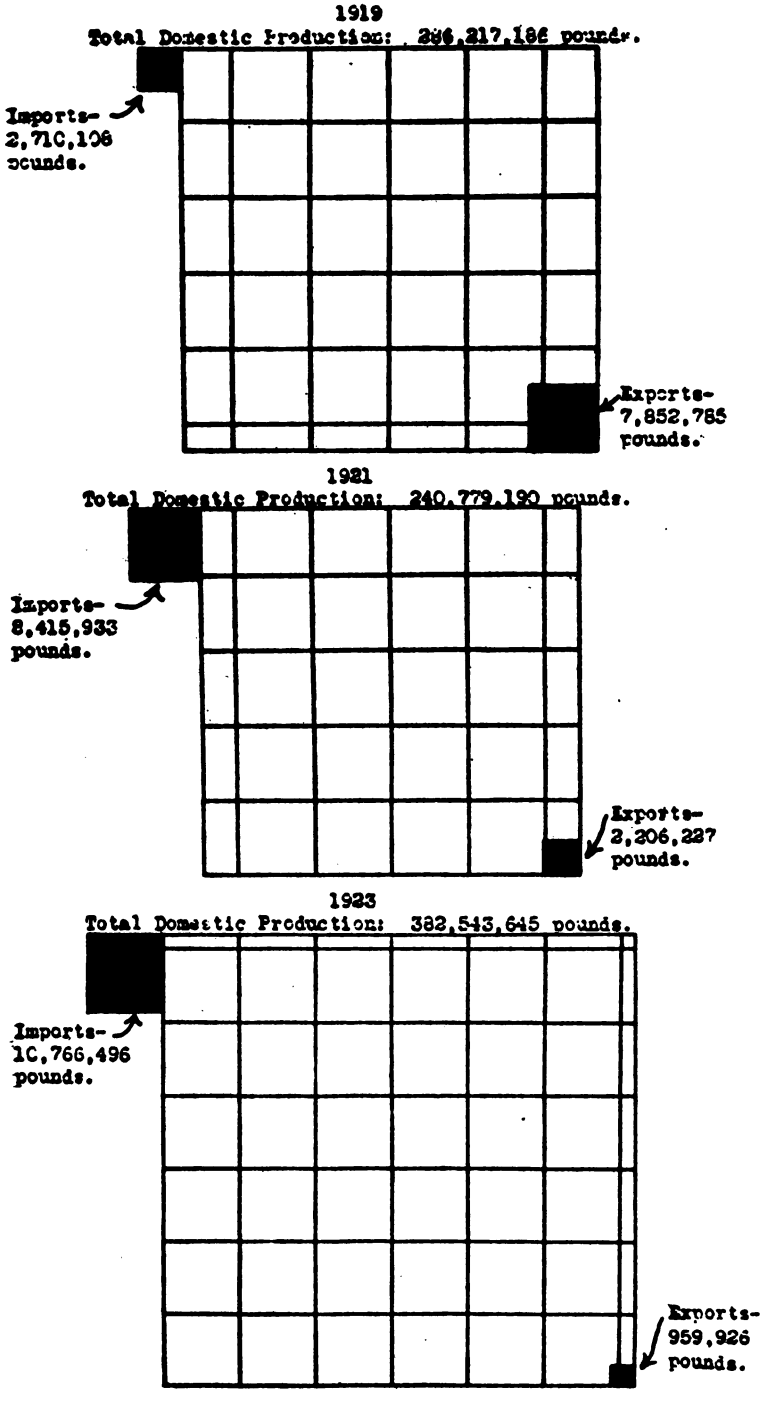
The following tabulation, comparing the value of imports and of domestic production of woolens and worsteds in each census year, 1889 to 1925,[1] shows that the ratio of imports to domestic production decreased steadily until 1914, and reached the lowest point in 1919. For a graphic illustration of the relation of imports to production in 1919, 1921, and 1923, see page 71.

Relation of value of imports to value of production

Census year:	Per cent	Census year—Continued.	Per cent
1889	19.17	1919	1.00
1899	5.65	1921	3.14
1904	5.43	1923	2.87
1909	4.16	1925	3.59
1914	7.85		

On January 1, 1914, the reduced duties on manufactures of wool provided in the tariff act of 1913 went into effect. These new rates, the general character of which may be gauged from the fact that the duty was 35 per cent ad valorem on cloths and dress goods of wool and 40 per cent on those made of mohair, 18 per cent on wool yarns,

[1] See Table 16, in the Appendix, p. 134.



Woolens and worsteds: Relation of imports and exports to domestic production; 1919, 1921, and 1923. Scale: 10,000,000 pounds to each small square.

and 8 per cent on wool tops, marked a substantial reduction from the rates of previous tariffs—a reduction even below the figures of the tariff law of 1894. Imports for consumption of woolen and worsted piece goods, in the six months preceding and following the change in rates of duty were as follows:

	Value	Duty collected	Ad valorem rate (per cent)
July 1 to Dec. 31, 1913	$8,722,158	$3,466,616	39.12
Jan. 1 to June 30, 1914	16,371,349	5,765,789	35.24

Much has been said relative to the effect of the tariff act of 1913 on the woolen and worsted industries, but for a clearer understanding of conditions existing in 1913 and 1914 it may be well to review the situation at that time. Both in 1911 and 1912 special bills for the revision and reduction of the wool schedule were under consideration by a Congress known to be opposed to the rates of duty of the 1909 act. In both these years bills embodying lower rates of duty were actually passed by both House and Senate and failed of becoming law only by the interposition of the veto of the President. The uncertainty attendant upon the discussion of these bills tended to cause a restriction of the woolen and worsted business in both periods.

A serious and protracted strike at Lawrence, Mass., in the early months of 1912, affecting several of the largest worsted mills in the country, and similar disturbances that followed at Passaic, N. J., and elsewhere, served also to reduce the production of woolen and worsted fabrics.

In the first months of 1913 a great strike prevailed among the garment workers of New York and other Eastern clothing centers. It is the manufacturers of ready-to-wear clothing who are the principal customers of the woolen and worsted manufacturers, and the partial paralysis of the clothing industry for several months compelled a further lessening of the production of wool fabrics.

Finally, when the time came in June and July, 1913, for the taking of orders for the spring season of 1914, the entire Underwood tariff bill, providing for free raw wool and a reduction in the duties on all kinds of wool goods, had been passed by the House of Representatives and was awaiting the action of the Senate. The enactment of the bill was assured, and it was anticipated that it might receive the signature of the President and be made at once effective, in time to apply to all goods required for the coming spring season. But unforeseen delay held up the final passage of the measure until October 3, 1913, and the reduced duties on wool goods were not to take effect until January 1, 1914.

In the earlier part of the summer, while the date of the enactment of the exact provisions of the new tariff bill was uncertain, the placing of orders for spring goods was deferred, thus shortening the time left for their manufacture. But by midsummer or soon after, it had become manifest that the new tariff would be passed too late for foreign competition to have any serious effect upon goods required for the spring of 1914. Because of the time needed for the many and varied manufacturing processes between the raw wool and the

finished cloth and then between the cloth and the finished garment, clothing manufacturers could delay no longer or their own establishments would be idle in October and November for want of material on which to work.

Meanwhile, lowered prices had been made by the mills, for in anticipation of free wool the prices of fine wools in this country had declined to a parity with foreign prices for similar wools—that is, fine wools were already selling in the United States in 1913 on a free-wool basis. The mills had made their prices when it seemed probable that August would see the new tariff in full effect. In the face of an intensified foreign competition and with a natural desire to keep their organizations intact if possible, many mills had made their prices without any regard to profit, content if they could earn expenses and hold their working force together until the results of the new tariff law could be determined by experience.

To sum up the situation, surplus stocks of wool goods on hand had become so exhausted by the tariff uncertainties of three successive years, 1911, 1912, and 1913, and by serious labor troubles, that if no unfavorable factor had been evident in the late summer and autumn of 1913 the demand for and sales of woolens and worsteds would have been much in excess of normal to make up for the accumulated deficiency of production in the previous years.

With a good spring season for 1914 assured to the American mills, there was inevitably an increase in the volume of orders shortly before and after the new tariff became a law. The mills that had named very low prices of course received a large amount of business. Thus, an anomalous combination of circumstances caused a number of mills to be busily employed during the winter of 1913–14.

The activity of woolen and worsted machinery was not recorded by the Government in 1913 and 1914. The National Association of Wool Manufacturers, however, made their first report as of December 1, 1913. The percentage of idle machinery on December 1, 1913, March 2, 1914, June 1, 1914, and September 1, 1914, was as follows:

Percentage of wool machinery idle in 1913 and 1914

Machinery	Ratio of idle to total reported			
	Dec. 1, 1913	Mar. 2, 1914	June 1, 1914	Sept. 1, 1914
	Per cent	*Per cent*	*Per cent*	*Per cent*
Woolen cards, sets	21.4	19.5	19.4	22.8
Worsted combs	23.1	13	15.5	21.0
Woolen spinning spindles	22.7	22.2	25.8	22.5
Worsted spinning spindles	26	22	18.1	16.9
Looms over 50-inch reed space	24.9	24.8	24.6	26.0
Looms 50-inch reed space or less	27.2	17.7	25	17.3

The above tabulation shows that there was less idle machinery after than before the new rates went into effect. As shown in preceding pages, the output had fallen behind demand, and the increase in demand in the spring of 1914, due in some degree to the lower prices permissible with free wool, stimulated both production and export trade as well as import trade.

In the fiscal year 1914 the woolens and worsteds imported into the United States were valued at 7.85 per cent of the value of the domestic production in that year. This was an increase attributable to an actual growth in imports and also to a decrease in the value of domestic production as compared with the figures for 1909. The decrease in value of domestic output in 1914 was largely due to lower costs and prices with wool on the free list. Whether or to what extent imports would have increased, after the fiscal year 1914, had there been no war, can not be determined. The latter part of 1914 saw American manufacturers exporting woolens and worsteds for military purposes.

GENERAL IMPORTS BY COUNTRIES

Prior to the World War the United Kingdom was the source of approximately one-half of the value of the woolens and worsteds imported into the United States. More than 45 per cent of the remainder came from France and Germany in about equal amounts. During the war practically all imports came from the United Kingdom; in 1918 about 10 per cent came from Canada; and in 1921 about 11 per cent from France. Imports from countries other than the United Kingdom have been mainly woolens. In 1919 the United Kingdom furnished 97 per cent of the value of our imports of woven fabrics of wool; in 1920, 84 per cent; and in 1925, 76 per cent. France accounted for 1 per cent in 1919 and 11 per cent in 1925. Imports from Germany were about 6 per cent of the total value in 1923 and 8 per cent in 1925.

Woven fabrics imported from the United Kingdom are mainly the higher grades of woolen and worsted suitings, overcoatings, and costume cloths. Imports of mohair and alpaca linings are practically all from the United Kingdom. These fabrics are worsteds and usually weigh under 4 ounces per square yard. They were classified statistically as dress goods prior to the enactment of the tariff law of 1913, when they were listed separately. Imports from France are mainly novelty fabrics for women's wear; those from Germany include woolen overcoatings and woolen and worsted suitings and dress goods; those from Belgium are chiefly woolens, particularly billiard cloths of the finer qualities for which that country has an established reputation.

Table 17, page 134, shows the percentage, in value, of the general imports of woven fabrics of wool from the United Kingdom, France, Germany, and Belgium, and from all other countries, from 1891 to 1925, inclusive.

DOMESTIC EXPORTS

Woven fabrics of wool were not separately recorded in export statistics prior to the calendar year 1918; and in the years 1918, 1919, 1920, and 1921, they were recorded only as one inclusive total. Exports in 1922 were statistically classified as worsted cloth, woolen cloth, cloth of mohair, and dress goods.[9] Exports in 1923 and subsequent years have been recorded in the following four classes: Wool cloth, cloth of mohair, dress goods, and other wool fabrics.

[9] It is interesting to note that in 1922, the only year for which there is statistical record of the relative amounts of woolens and worsteds, domestic exports consisted mainly of woolens.

Under the designation "wool manufactures, all other" (including carpets and rugs, blankets, etc., as well as cloths and dress goods, and excluding only wearing apparel), exports before 1914 were small, usually under $1,000,000 a year. They declined from 1909 to 1913. In the fiscal year 1914 they increased to $1,668,199; in 1916 they reached $33,331,873, declining to $13,435,946 in the fiscal year 1918.

Domestic exports of woven fabrics of wool since January 1, 1918, have been as follows:

Calendar year	Quantity	Value	Value per pound	Calendar year	Quantity	Value	Value per pound
	Pounds				*Pounds*		
1918	3,152,224	$8,686,888	$2.739	1923	1,031,903	$2,346,953	$2.274
1919	7,852,785	19,799,723	2.521	1924	637,036	1,331,775	2.091
1920	8,724,742	24,258,584	2.780	1925	547,374	1,132,971	2.070
1921	2,206,227	4,040,988	1.831	1926	432,822	872,235	2.015
1922	853,380	1,676,302	1.971				

The 1925 exports of woven fabrics of wool were statistically recorded as follows:

	Pounds	Yards	Value
Wool cloth	377,211	626,440	$812,895
Cloth of mohair	63,159	119,614	150,874
Wool dress goods	47,388	89,754	82,094
Other wool fabrics	59,616		87,108
Total	547,374		1,132,971

American exports of woolens and worsteds normally find their best markets in Canada and Cuba. The main purchasers in 1925 were Canada, Cuba, the Philippine Islands, Mexico, the United Kingdom, Brazil, Colombia, and Venezuela, in the order named.

It has always been assumed in England and other foreign wool manufacturing countries, as well as in the United States, that large exports of American wool manufactures were not practicable, (1) because of the relatively high duty on raw wool, in most tariff acts, and (2) because of the high cost of construction and equipment and the high wage cost of operation of American mills. The first obstacle might have been overcome under the tariff acts levying a duty on raw wool, by taking advantage of the 99 per cent rebate of duty on materials imported for manufacture into articles that were subsequently exported. This obstacle was entirely removed by the act of 1913 in placing raw wool on the free list.

In actual practice, domestic wool manufacturers have found the 99 per cent rebate of duty clause inoperative. Woolens and worsteds are usually composed of both foreign and domestic wools, and at the time of manufacture it is seldom known what portion of the cloths will be exported. The small amount of wool goods exported usually passes through the hands of a jobber, and it is difficult to show the amount of foreign wool on which a duty has been paid.

During the World War the largest domestic wool manufacturing corporation made a determined effort to secure foreign business. In 1917 branch offices were established in Canada, Cuba, Mexico,

five South American countries, and in the Far East. In 1919 exports by this company totaled $4,500,000. In 1921, however, the foreign offices were closed, as it was found impossible successfully to export American woolens and worsteds in competition with renewed exports on a large scale from Europe.

It is the opinion of those familiar with the trade that exports of woven fabrics of wool, even with free raw material, will not in the near future be any considerable portion of the domestic production. The relation of exports to domestic production in 1919, 1921, and 1923 is graphically illustrated on page 71.

TARIFF HISTORY

Cloths, woolen or worsted.—The tariff acts of 1890, 1897, 1909, and 1922 provided compound duties for wool cloths. In all of these acts the specific or compensatory portion of the rate was figured as a multiple of the duty on raw wool.

The act of 1890 classified cloths made wholly or in part of wool, worsted, the hair of the camel, goat, alpaca, or other animals, into three classes, according to value, and provided specific rates of 33, 38½, and 44 cents per pound, respectively, and additional ad valorem duties of 40 per cent for the first and second groups and 50 per cent for the third. The duties on cloths in the tariff acts of 1897 and 1909 were identical; the three classes provided for bore specific duties of 33, 44, and 44 cents, respectively, and additional ad valorem rates of 50, 50, and 55 per cent, respectively. The tariff act of 1922 (in par. 1109) provides for three classes, according to value, with specific rates of 24, 37, and 45 cents per pound, respectively, and additional ad valorem duties of 40 per cent for the first and 50 per cent for the second and third. The specific rates of 24 and 37 cents apply to the fabric as a whole, while the 45-cents-per-pound rate applies to the wool content only.

The act of 1894 provided ad valorem rates of 40 and 50 per cent on wool cloths, classified according to value. The act of 1913 provided ad valorem rates of 35 and 40 per cent, respectively, on cloths made of wool and of mohair. The act of 1921 added to these ad valorem duties a specific duty of 45 cents a pound because of a duty of the same amount levied on raw wool and mohair.

Dress goods. The tariff acts of 1890, 1897, and 1909 provided compound duties on dress goods weighing not over 4 ounces per square yard and composed wholly or in part of wool, and also on those made with cotton warp. In these acts the specific portion of the rate was stated in terms of cents per square yard. Dress goods weighing over 4 ounces per square yard were dutiable as "cloths" and the specific portions of the rate were stated in terms of cents per pound.

The tariff act of 1890 classified cotton-warp dress goods weighing not over 4 ounces per square yard into two classes, based on the value per square yard, and provided specific rates of 7 and 8 cents per square yard, and additional ad valorem duties of 40 and 50 per cent, respectively. On dress goods composed wholly or in part of wool there was levied a specific rate of 12 cents per square yard and in addition an ad valorem duty of 50 per cent. On both all-wool and cotton-warp dress goods, weighing over 4 ounces per square yard, there was levied a specific duty of 44 cents per pound, and in addition an ad valorem duty of 50 per cent.

The rates of duty on dress goods in the tariff acts of 1897 and 1909 were identical, except that in the act of 1909 cotton-warp dress goods weighing over 4 ounces per square yard were dutiable at 5 per cent less than in the act of 1897. These two acts classified dress goods composed wholly or in part of wool, weighing not over 4 ounces per square yard, into two classes according to the value per pound; a specific duty of 11 cents per square yard applied to both classes and in addition an ad valorem duty of 50 per cent for the first and 55 per cent for the second. Cotton-warp dress goods, weighing not over 4 ounces per square yard, were classified according to the value per pound and the value per square yard; specific duties of 7 and 8 cents per square yard were provided and in addition ad valorem duties of 50 and 55 per cent. As previously noted, dress goods weighing over 4 ounces per square yard, woven either with or without cotton warp, were dutiable not as dress goods but as cloths.

The tariff act of 1894 provided ad valorem rates of 40 and 50 per cent on dress goods, classified according to value. The act of 1913 provided an ad valorem rate of 35 per cent for dress goods, wholly or in chief value of wool, and 40 per cent ad valorem on all fabrics made of mohair, alpaca, etc. The emergency tariff act of 1921 added to these ad valorem duties a specific duty of 45 cents a pound because of the duty of the same amount levied on raw wool and mohair.

The tariff act of 1922 (in par. 1108) provides for woven fabrics weighing not more than 4 ounces per square yard, wholly or in chief value of wool. On those made with a cotton warp a specific duty of 36 cents per pound is levied and in addition an ad valorem duty of 50 per cent. Those made wholly or in chief value of wool are divided into two classes, according to value, with specific rates of 37 and 45 cents per pound, respectively, and additional ad valorem duties of 50 per cent for both classes; the specific rate of 37 cents per pound applies to the fabric as a whole, while the 45 cents per pound rate applies to the wool content only.

Wool flannels.—The tariff acts of 1890, 1894, 1897, and 1909 made special provision for "flannels for underwear." The duties levied on these fabrics were lower than those imposed on other wool cloths, on the assumption that flannels were "an essential article" and "in universal use."

The acts of 1890, 1897, and 1909 provided compound duties for flannels for underwear; the specific portion of the rate was figured as a multiple of the duty on raw wool. In these acts flannels valued at more than 50 cents per pound were dutiable at the same rate as dress goods and those weighing over 4 ounces per square yard were dutiable as cloths.

The tariff act of 1890 classified flannels valued at not more than 50 cents per pound into three classes, according to value, and provided specific rates of 16½, 22, and 33 cents per pound, respectively, for each group and additional ad valorem duties of 30 per cent for the first and 35 per cent for the second and third. The duties of the the tariff acts of 1897 and 1909 were identical. Flannels valued at not more than 50 cents per pound were divided into two classes, according to value, and bore specific duties of 22 and 33 cents, and additional ad valorem duties of 30 and 35 per cent, respectively.

The tariff act of 1894 provided ad valorem rates of 25, 30, and 35 per cent on flannels for underwear, weighing not more than 4 ounces per square yard. These were classified according to value. In the act of 1913 the term "flannel" was used in place of the narrower designation "flannel for underwear" that had been used since 1890. This act provided for two groups, classified according to value, with ad valorem duties of 25 per cent for the first class and 30 per cent for the second.

Fabrics of mohair, alpaca, etc.—Under the tariff act of 1913 fabrics made of mohair, alpaca, etc., were dutiable at 40 per cent ad valorem. Under all other tariff acts such fabrics have been dutiable at the rates provided for fabrics of wool.

Compensatory duty.—In any analysis of compound duties on manufactures of wool, the specific duty must be set down to the account of the farmer or wool grower. It is there because the duty on raw wool is there and presumably for no other reason. The specific rates are intended to compensate the American manufacturer for the enhancement in price of his raw material attributable to the duty on the wool.

In the tariff acts of 1890, 1897, and 1909 the specific duties levied on woven fabrics of wool were based upon the assumption that it took 4 pounds of unwashed wool to make 1 pound of cloth. These compensatory rates ranged from 16½ to 44 cents per pound, according to the value of the fabric.

The specific duties levied on woven fabrics of wool in paragraphs 1108 and 1109 of the tariff act of 1922 were computed on the basis of data published in 1912 in the Report of the Tariff Board on Schedule K (see pp. 621–626) showing the loss in weight in the manufacture of scoured wool into worsted cloth. It was there stated that from 100 pounds of scoured wool there was normally produced 80 to 90 pounds, averaging around 85 pounds, of tops; that from 100 pounds of tops there was an average yield of at least 91 pounds of worsted yarn; and that from 100 pounds of worsted yarn there were obtained 85 to 95 pounds, averaging possibly 90 pounds, of worsted cloth. The average yield of worsted cloth from 100 pounds of scoured wool was therefore figured as 100 x 0.85 x 0.91 x 0.90, or 69.615 pounds. The duty paid on 100 pounds of scoured wool is $31, therefore $31 divided by 69.615 gives 44.53 cents—in round figures 45 cents—as the compensatory duty required on worsted cloths made entirely of wool. In the law it was specified that this "full compensatory" duty of 45 cents a pound should apply only to the wool content of the fabrics to which it related.

It was assumed that fabrics entered at low values necessarily contain cotton, shoddy, wool waste, or other materials which were free, or else dutiable at rates lower than 31 cents a pound, and therefore that on such goods the full compensatory duty of 45 cents a pound was too much. On woven fabrics of wool weighing not more than 4 ounces per square yard and valued at not more than 80 cents a pound the compensatory duty was fixed at 37 cents a pound, and on those made with warp wholly of cotton or other vegetable fiber at 36 cents a pound. On woven fabrics of wool weighing more than 4 ounces per square yard, the compensatory duty was fixed at 24 cents when the value of the fabric did not exceed 60 cents per pound and at 37 cents a pound when the value of the fabric exceeded 60 but did not exceed

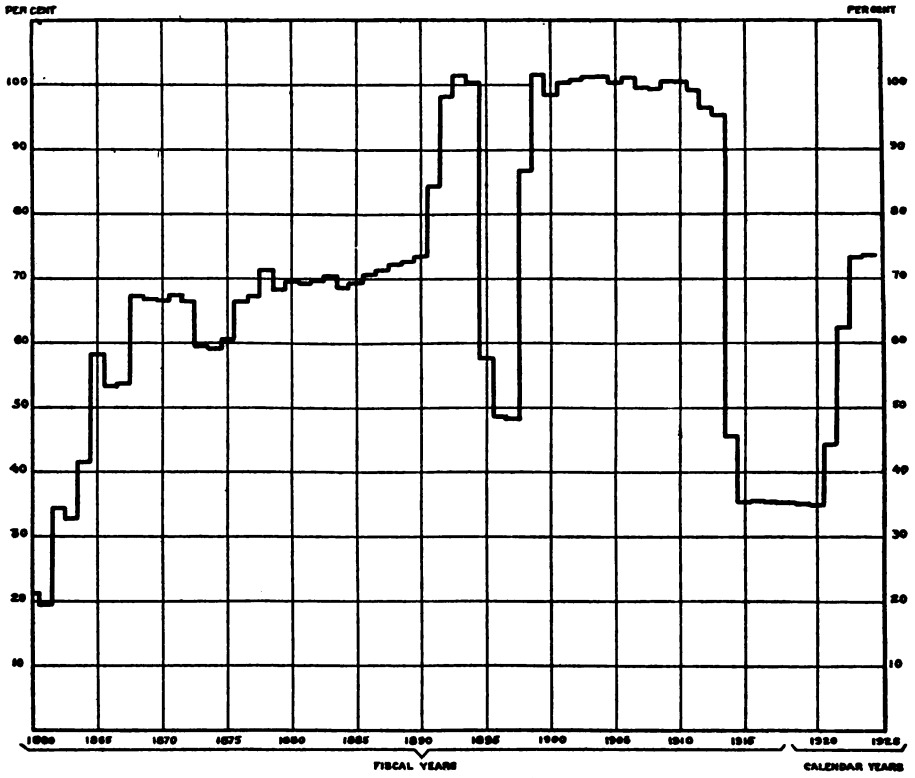
80 cents per pound. These reduced compensatory duties apply to the total weight of the fabric and not to the wool content only.

The following table, compiled from imports entered under paragraphs 1108 and 1109 in 1925, shows that about 30 per cent of the total duties collected on woven fabrics of wool were specific or compensatory. It should be noted, in reading all tables of imports showing an "equivalent ad valorem" rate of duty, that when the material is dutiable a substantial amount of the rate on the manufactured article is compensatory.

Specific and ad valorem duties collected under the provisions of paragraphs 1108 and 1109 on worsteds and woolens imported in 1925

Import classification	Duties collected			Per cent of total duty	
	Ad valorem	Specific	Total	Ad valorem	Specific
Woven fabrics wholly or in chief value of mohair:					
Weighing not over 4 ounces per square yard—					
Valued not over 80 cents per pound	$4.00	$3.70	$7.70	51.95	48.05
Valued over 80 cents per pound (mohair contents)	6,237.00	1,947.60	8,184.60	76.20	23.80
Warp of cotton or other vegetable fiber	96,527.50	31,334.04	127,861.54	75.49	24.51
Weighing over 4 ounces per square yard—					
Valued not over 60 cents per pound	40.80	94.08	134.88	30.25	69.75
Valued over 60 cents, not over 80 cents per pound	5.50	5.55	11.05	49.77	50.23
Valued over 80 cents per pound (mohair contents)	21,053.00	8,488.80	29,541.80	71.27	28.73
Woven fabrics wholly or in chief value of wool and other hair:					
Worsteds—					
Weighing not over 4 ounces per square yard—					
Valued not over 80 cents per pound	7.50	7.40	14.90	50.34	49.66
Valued over 80 cents per pound (wool contents)	22,583.50	7,629.30	30,212.80	74.75	25.25
Warp of cotton or other vegetable fiber	16,026.00	5,756.40	21,782.40	73.57	26.43
Weighing over 4 ounces per square yard—					
Valued not over 60 cents per pound	4,457.20	5,421.12	9,878.32	45.12	54.88
Valued over 60 cents, not over 80 cents per pound	2,268.50	2,429.42	4,697.92	48.29	51.71
Valued over 80 cents per pound (wool contents)	1,068,863.00	317,410.65	1,386,273.65	77.10	22.90
Woolens—					
Weighing not over 4 ounces per square yard—					
Valued not over 80 cents per pound	836.50	910.20	1,746.70	47.89	52.11
Valued over 80 cents per pound (wool contents)	314,001.50	79,684.65	393,686.15	79.76	20.24
Warp of cotton or other vegetable fiber	767,645.00	276,010.56	1,043,655.56	73.55	26.45
Weighing over 4 ounces per square yard—					
Valued not over 60 cents per pound	88,204.80	95,924.88	184,129.68	47.90	52.10
Valued over 60 cents, not over 80 cents per pound	82,734.50	89,892.24	172,626.74	47.93	52.07
Valued over 80 cents per pound (wool contents)	8,496,668.50	3,681,967.50	12,178,636.00	69.77	30.23
Total	10,968,164.30	4,604,918.09	15,593,082.39	70.47	29.53

Ad valorem duty.—The ad valorem duty is intended to equalize the difference in conversion costs here and abroad. In considering its proper adjustment it is necessary to look upon this ad valorem duty as though it were the only duty upon wool goods, the specific duty being necessitated by and designed to offset the wool duty. On the assumption that the average foreign conversion costs were two-thirds of the American, this duty was fixed at 50 per cent ad valorem on all woven fabrics of wool dutiable under paragraphs 1108 and 1109 of the tariff act of 1922, with only one exception. This exception was woven fabrics weighing more than 4 ounces per square yard and



Equivalent ad valorem rates of duty on imports of woolen and worsted fabrics, 1860–1924

valued at less than 60 cents per pound; on these cheap low-grade fabrics the ad valorem duty was reduced to 40 per cent on the assumption that the conversion cost was a smaller proportion of the total cost than on fabrics of better grade and value.

WORDING OF TARIFF ACTS OF 1890 TO 1922, INCLUSIVE

In the tariff acts of 1890, 1894, 1897, 1909, and 1913, woolens and worsteds were divided into (a) cloths, (b) dress goods, coat linings, Italian cloths, bunting, and similar goods, and (c) flannels. The word "cloths" is used in the wool industry in a restrictive sense to denote fabrics, used mainly for men's wear, heavier than the general run of dress goods. There is, however, no clear line of demar-

cation between the two; for instance, some types of dress goods are heavier than cloths used for men's summer suits. In the tariff acts of 1897 (par. 369) and 1909 (par. 381) it was therefore stipulated that women's and children's dress goods, linings, etc., weighing over 4 ounces per square yard should be considered "cloths." Irrespective of the use of the fabrics or the trade terminology employed, therefore, woolens and worsteds were primarily classified according to weight. This fact logically led to the procedure adopted in the tariff act of 1922, i. e., the discarding of trade terms such as cloths and dress goods, and the classifying of woolens and worsteds into two paragraphs, one of which (1108) covers those weighing not over 4 ounces per square yard, and the other (1109) covering those weighing over 4 ounces per square yard. The classification adopted in 1922 is therefore practically the same as that previously used but with the omission of unnecessary verbiage. The omission of any specific mention of "flannels" in the act of 1922 stops litigation as to what is or is not "flannel" and permits such goods to enter on a parity with other woven fabrics of wool, under paragraph 1108 or under paragraph 1109, according to their weight. The wording used in the tariff acts of 1890 to 1922, inclusive, to cover woolens and worsteds is given below.

Rates of duty

WOOL CLOTHS

Act of—	Par.	Tariff classification or description	Rates of duty
1890	392	On woolen and worsted cloths, * * * and all manufactures of every description made wholly or in part of wool, worsted, the hair of the camel, goat, alpaca, or other animals, not specially provided for in this act, valued at not more than 30 cents per pound, the duty per pound shall be three times the duty imposed by this act on a pound of unwashed wool of the first class, and in addition thereto 40 per centum ad valorem; valued at more than 30 and not more than 40 cents per pound, the duty per pound shall be three and one-half times the duty imposed by this act on a pound of unwashed wool of the first class, and in addition thereto 40 per centum ad valorem; valued at above 40 cents per pound, the duty per pound shall be four times the duty imposed by this act on a pound of unwashed wool of the first class, and in addition thereto 50 per centum ad valorem.	
		Summary:	
		Valued at not more than 30 cents per pound	33 cents per pound and 40 per cent ad valorem.
		Valued at more than 30 but not more than 40 cents per pound.	38½ cents per pound and 40 per cent ad valorem.
		Valued at more than 40 cents per pound	44 cents per pound and 50 per cent ad valorem.
1894	283	On women's and children's dress goods, coat linings, Italian cloth, bunting, or goods of similar description or character, and on all manufactures, composed wholly or in part of wool, worsted, the hair of the camel, goat, alpaca, or other animals, including such as have India rubber as a component material, and not specially provided for in this act, valued at not over 50 cents per pound, 40 per centum ad valorem; valued at more than 50 cents per pound, 50 per centum ad valorem.	
		Summary:	
		Valued at not more than 50 cents per pound	40 per cent ad valorem.
		Valued at more than 50 cents per pound	50 per cent ad valorem.

Rates of duty—Continued

WOOL CLOTHS—Continued

Act of—	Par.	Tariff classification or description	Rates of duty
1897	366	On cloths, * * * and all manufactures of every description made wholly or in part of wool, not specially provided for in this Act, valued at not more than 40 cents per pound, the duty per pound shall be three times the duty imposed by this Act on a pound of unwashed wool of the first class; valued at above 40 cents per pound and not above 70 cents per pound, the duty per pound shall be four times the duty imposed by this Act on one pound of unwashed wool of the first class, and in addition thereto, upon all the foregoing, 50 per centum ad valorem; valued at over 70 cents per pound, the duty per pound shall be four times the duty imposed by this Act on one pound of unwashed wool of the first class and 55 per centum ad valorem.	
		Summary:	
		Valued at not more than 40 cents per pound	33 cents per pound and 50 per cent ad valorem.
		Valued at more than 40 but not more than 70 cents per pound.	44 cents per pound and 50 per cent ad valorem.
		Valued at more than 70 cents per pound	44 cents per pound and 55 per cent ad valorem
1909	378	On cloths, * * * and all manufactures of every description made wholly or in part of wool, not specially provided for in this section, valued at not more than 40 cents per pound, the duty per pound shall be three times the duty imposed by this section on a pound of unwashed wool of the first class; valued at above 40 cents per pound and not above 70 cents per pound, the duty per pound shall be four times the duty imposed by this section on one pound of unwashed wool of the first class, and in addition thereto, upon all the foregoing, 50 per centum ad valorem; valued at over 70 cents per pound, the duty per pound shall be four times the duty imposed by this section on one pound of unwashed wool of the first class and 55 per centum ad valorem.	
		Summary:	
		Valued at not more than 40 cents per pound	33 cents per pound and 50 per cent ad valorem.
		Valued at more than 40 but not more than 70 cents per pound.	44 cents per pound and 50 per cent ad valorem.
		Valued at more than 70 cents per pound	44 cents per pound and 55 per cent ad valorem.
1913	288	Cloths, * * * and all manufactures of every description made, by any process, wholly or in chief value of wool, not specially provided for in this section.	35 per centum ad valorem.
1921	19	Wool and hair of the kind provided for in paragraph 18, when advanced in any manner or by any process of manufacture beyond the washed or scoured condition, and manufactures of which wool or hair of the kind provided for in paragraph 18 is the component material of chief value, 45 cents per pound in addition to the rates of duty imposed thereon by existing law.	45 cents per pound and 35 per cent ad valorem.
1922	1109	Woven fabrics, weighing more than 4 ounces per square yard, wholly or in chief value of wool, valued at not more than 60 cents per pound, 24 cents per pound and 40 per centum ad valorem; valued at more than 60 cents but not more than 80 cents per pound, 37 cents per pound and 50 per centum ad valorem; valued at more than 80 cents but not more than $1.50 per pound, 45 cents per pound upon the wool content thereof and 50 per centum ad valorem; valued at more than $1.50 per pound, 45 cents per pound upon the wool content thereof and 50 per centum ad valorem.	
		Summary:	
		Valued at not more than 60 cents per pound	24 cents per pound and 40 per cent ad valorem.
		Valued at more than 60 but not more than 80 cents per pound.	37 cents per pound and 50 per cent ad valorem.
		Valued at more than 80 cents per pound	45 cents per pound [1] and 50 per cent ad valorem.

[1] Wool content.

Rates of duty—Continued

DRESS GOODS

Act of—	Par.	Tariff classification or description	Rates of duty
1909	384	On women's and children's dress goods, coat linings, Italian cloths, and goods of similar character or description of which the warp consists wholly of cotton or other vegetable material, with the remainder of the fabric composed wholly or in part of wool, worsted, the hair of the camel, goat, alpaca, or other animals, valued at not exceeding 15 cents per square yard, 7 cents per square yard, and in addition thereto 40 per centum ad valorem; valued at above 15 cents per square yard, 8 cents per square yard, and in addition thereto 50 per centum ad valorem: *Provided*, That on all such goods weighing over 4 ounces per square yard the duty per pound shall be four times the duty imposed by this act on a pound of unwashed wool of the first class, and in addition thereto 50 percentum ad valorem.	
		Summary:	
		Cotton warp—	
		Weighing not over 4 ounces per square yard—	
		Valued at not over 15 cents per square yard	7 cents per square yard and 40 per cent ad valorem.
		Valued at over 15 cents per square yard	8 cents per square yard and 50 per cent ad valorem.
		Weighing over 4 ounces per square yard	44 cents per pound and 50 per cent ad valorem.
	385	On women's and children's dress goods, coat linings, Italian cloths, bunting, and goods of a similar description or character composed wholly or in part of wool, worsted, the hair of the camel, goat, alpaca, or other animals, and not specially provided for in this act, the duty shall be 12 cents per square yard, and in addition thereto 50 per centum ad valorem: *Provided*, That on all such goods weighing over 4 ounces per square yard the duty per pound shall be four times the duty imposed by this act on a pound of unwashed wool of the first class and in addition thereto 50 per centum ad valorem.	
		Summary:	
		Composed wholly or in part of wool—	
		Weighing not over 4 ounces per square yard	12 cents per square yard and 50 per cent ad valorem.
		Weighing over 4 ounces per square yard	44 cents per pound and 50 per cent ad valorem.
1894	253	On women's and children's dress goods, coat linings, Italian cloth, bunting, or goods of similar description or character, and on all manufactures, composed wholly or in part of wool, worsted, the hair of the camel, goat, alpaca, or other animals, including such as have India rubber as a component material, and not specially provided for in this Act, valued at not over 30 cents per pound, 40 per centum ad valorem: valued at more than 30 cents per pound, 50 per centum ad valorem.	
		Summary	
		Valued at not over 30 cents per pound	40 per cent ad valorem.
		Valued at over 30 cents per pound	50 per cent ad valorem.
1897	268	On women's and children's dress goods, coat linings, Italian cloths, and goods of similar description and character of which the warp consists wholly of cotton or other vegetable material with the remainder of the fabric composed wholly or in part of wool, valued at not exceeding 15 cents per square yard, the duty shall be 7 cents per square yard: valued at more than 15 cents per square yard, the duty shall be 8 cents per square yard; and in addition thereto on all the foregoing valued at not above 70 cents per pound, 40 per centum ad valorem; valued above 70 cents per pound, 55 per centum ad valorem: *Provided*, That on all the foregoing, weighing over 4 ounces per square yard, the duty shall be the same as imposed by this schedule on cloths.	
		Summary	
		Cotton warp—	
		Weighing not over 4 ounces per square yard—	
		Valued at not over 70 cents per pound—	
		Valued at not over 15 cents per square yard	7 cents per square yard and 40 per cent ad valorem.
		Valued at over 15 cents per square yard	8 cents per square yard and 40 per cent ad valorem.
		Valued at over 70 cents per pound—	
		Valued at not over 15 cents per square yard	7 cents per square yard and 55 per cent ad valorem.
		Valued at over 15 cents per square yard	8 cents per square yard and 55 per cent ad valorem.
		Weighing over 4 ounces per square yard—	
		Valued at not over 40 cents per pound	33 cents per pound and 50 per cent ad valorem.
		Valued at over 40 but not over 70 cents per pound	44 cents per pound and 50 per cent ad valorem.
		Valued at over 70 cents per pound	44 cents per pound and 55 per cent ad valorem.

Rates of duty—Continued

DRESS GOODS—Continued

Act of—	Par.	Tariff classification or description	Rates of duty
1897	369	On women's and children's dress goods, coat linings, Italian cloths, bunting, and goods of similar description or character composed wholly or in part of wool, and not specially provided for in this Act, the duty shall be 11 cents per square yard; and in addition thereto on all the foregoing valued at not above 70 cents per pound, 50 per centum ad valorem; valued above 70 cents per pound, 55 per centum ad valorem: *Provided*, That on all the foregoing, weighing over 4 ounces per square yard, the duty shall be the same as imposed by this schedule on cloths.	
		Summary:	
		Composed wholly or in part of wool—	
		Weighing not over 4 ounces per square yard—	
		Valued at not over 70 cents per pound	11 cents per square yard a 50 per cent ad valorem.
		Valued at over 70 cents per pound	11 cents per square yard a 55 per cent ad valorem.
		Weighing over 4 ounces per square yard—	
		Valued at not over 40 cents per pound	33 cents per pound and per cent ad valorem.
		Valued at over 40 but not over 70 cents per pound.	44 cents per pound and per cent ad valorem.
		Valued at over 70 cents per pound	44 cents per pound and per cent ad valorem.
1909	380	On women's and children's dress goods, coat linings, Italian cloths, and goods of similar description and character of which the warp consists wholly of cotton or other vegetable material with the remainder of the fabric composed wholly or in part of wool, valued at not exceeding 15 cents per square yard, the duty shall be 7 cents per square yard; valued at more than 15 cent sper square yard, the duty shall be 8 cents per square yard; and in addition thereto on all the foregoing valued at not above 70 cents per pound, 50 per centum ad valorem; valued above 70 cents per pound, 55 per centum ad valorem: *Provided*, That on all the foregoing, weighing over 4 ounces per square yard, the rates of duty shall be 5 per centum less than those imposed by this schedule on cloths.	
		Summary:	
		Cotton warp—	
		Weighing not over 4 ounces per square yard—	
		Valued at not over 70 cents per pound—	
		Valued at not over 15 cents per square yard.	7 cents per square yard 50 per cent ad valorem.
		Valued at over 15 cents per square yard	8 cents per square yard 50 per cent ad valorem
		Valued at over 70 cents per pound—	
		Valued at not over 15 cents per square yard	7 cents per square yard 55 per cent ad valore
		Valued at over 15 cents per square yard	8 cents per square yard 55 per cent ad valorem
		Weighing over 4 ounces per square yard—	
		Valued at not over 40 cents per pound	33 cents per pound and per cent ad valorem.
		Valued at over 40 but not over 70 cents per pound.	44 cents per pound and 5 per cent ad valorem.
		Valued at over 70 cents per pound	44 cents per pound and per cent ad valorem.
1909	381	On women's and children's dress goods, coat linings, Italian cloths, bunting, and goods of similar description or character composed wholly or in part of wool, and not specially provided for in this section, the duty shall be 11 cents per square yard; and in addition thereto on all the foregoing valued at not above 70 cents per pound, 50 per centum ad valorem; valued above 70 cents per pound, 55 per centum ad valorem: *Provided*, That on all the foregoing, weighing over 4 ounces per square yard, the duty shall be the same as imposed by this schedule on cloths.	
		Summary:	
		Composed wholly or in part of wool—	
		Weighing not over four ounces per square yard—	
		Valued at not over 70 cents per pound	11 cents per square yard 50 per cent ad valorem
		Valued at over 70 cents per pound	11 cents per square yard 55 per cent ad valorem
		Weighing over four ounces per square yard—	
		Valued at not over 40 cents per pound	33 cents per pound a per cent ad valorem.
		Valued at over 40 but not over 70 cents per pound.	44 cents per pound a per cent ad valorem.
		Valued at over 70 cents per pound	44 cents per pound a per cent ad valorem.

Rates of duty—Continued

DRESS GOODS—Continued

Act of—	Par.	Tariff classification or description	Rates of duty
1913	290	Women's and children's dress goods, coat linings, Italian cloths, bunting, and goods of similar description and character, composed wholly or in chief value of wool, and not specially provided for in this section.	35 per cent ad valorem.
1921	19	Wool and hair of the kind provided for in paragraph 18, when advanced in any manner or by any process of manufacture beyond the washed or scoured condition, and manufactures of which wool or hair of the kind provided for in paragraph 18 is the component material of chief value, 45 cents per pound in addition to the rates of duty imposed thereon by existing law.	45 cents per pound and 35 per cent ad valorem.
1922	1108	Woven fabrics, weighing not more than 4 ounces per square yard, wholly or in chief value of wool, valued at not more than 80 cents per pound, 37 cents per pound and 50 per centum ad valorem; valued at more than 80 cents per pound, 45 cents per pound upon the wool content thereof and 50 per centum ad valorem: *Provided*, That if the warp of any of the foregoing is wholly of cotton or other vegetable fibre, the duty shall be 36 cents per pound and 50 per centum ad valorem.	
		Summary:	
		Valued at not more than 80 cents per pound	37 cents per pound and 50 per cent ad valorem.
		Valued at more than 80 cents per pound	45 cents per pound [1] and 50 per cent ad valorem.
		Made with cotton warp	36 cents per pound and 50 per cent ad valorem.

WOOL FLANNELS

1890	393	* * * flannels for underwear composed wholly or in part of wool, the hair of the camel, goat, alpaca, or other animals, valued at not more than 30 cents per pound, the duty per pound shall be the same as the duty imposed by this act on one pound and one-half of unwashed wool of the first class, and in addition thereto 30 per centum ad valorem; valued at more than 30 and not more than 40 cents per pound, the duty per pound shall be twice the duty imposed by this act on a pound of unwashed wool of the first class; valued at more than 40 cents and not more than 50 cents per pound, the duty per pound shall be three times the duty imposed by this act on a pound of unwashed wool of the first class; and in addition thereto upon all the above-named articles 35 per centum ad valorem.	
		* * * Flannels composed wholly or in part of wool, the hair of the camel, goat, alpaca, or other animals, valued at above 50 cents per pound shall be classified and pay the same duty as women's and children's dress goods, coat linings, Italian cloths, and goods of similar character and description provided by this act.	
		Summary:	
		Valued at not more than 30 cents per pound	16½ cents per pound and 30 per cent ad valorem.
		Valued at more than 30 and not more than 40 cents per pound.	22 cents per pound and 35 per cent ad valorem.
		Valued at more than 40 cents and not more than 50 cents per pound.	33 cents per pound and 35 per cent ad valorem.
		Wool flannels weighing over 4 ounces per square yard	44 cents per pound and 50 per cent ad valorem.
1894	282	* * * flannels for underwear, * * * composed wholly or in part of wool, the hair of the camel, goat, alpaca, or other animals, valued at not more than 30 cents per pound, 25 per centum ad valorem; valued at more than 30 and not more than 40 cents per pound, 30 per centum ad valorem; valued at more than 40 cents per pound, 35 per centum ad valorem: *Provided*, * * * on flannels weighing over 4 ounces per square yard, the same duties as on dress goods.	
		Summary:	
		Valued at not more than 30 cents per pound	25 per cent ad valorem.
		Valued at more than 30 and not more than 40 cents per pound	30 per cent ad valorem.
		Valued at more than 40 cents per pound	35 per cent ad valorem.
		Weighing over 4 ounces per square yard—	
		Valued at not more than 50 cents per pound	40 per cent ad valorem.
		Valued at more than 50 cents per pound	50 per cent ad valorem.

[1] Upon the wool content thereof.

Rates of duty—Continued

WOOL FLANNELS—Continued

Act of—	Par.	Tariff classification or description	Rates of duty
1897	367	* * * flannels for underwear composed wholly or in part of wool, valued at not more than 40 cents per pound, the duty per pound shall be the same as the duty imposed by this Act on two pounds of unwashed wool of the first class; and in addition thereto 30 per centum ad valorem; valued at more than 40 cents and not more than 50 cents per pound, the duty per pound shall be three times the duty imposed by this Act on one pound of unwashed wool of the first class, and in addition thereto 35 per centum ad valorem. * * * Flannels composed wholly or in part of wool, valued at above 50 cents per pound, shall be classified and pay the same duty as women's and children's dress goods, coat linings, Italian cloths, and goods of similar character and description provided by this Act.	
		Summary:	
		Valued at not more than 40 cents per pound	22 cents per pound and 30 per cent ad valorem.
		Valued at more than 40 cents and not more than 50 cents per pound.	33 cents per pound and 35 per cent ad valorem.
		Valued at more than 50 but not more than 70 cents per pound.	11 cents per square yard and 50 per cent ad valorem.
		Valued at more than 70 cents per pound	11 cents per square yard and 55 per cent ad valorem.
		Weighing over 4 ounces per square yard—	
		Valued at more than 50 cents but not more than 70 cents per pound.	44 cents per pound and 50 per cent ad valorem.
		Valued at more than 70 cents per pound	44 cents per pound and 55 per cent ad valorem.
1909	379	* * * flannels for underwear composed wholly or in part of wool, valued at not more than 40 cents per pound, the duty per pound shall be the same as the duty imposed by this section on two pounds of unwashed wool of the first class, and in addition thereto 30 per centum ad valorem; valued at more than 40 cents and not more than 50 cents per pound, the duty per pound shall be three times the duty imposed by this section on one pound of unwashed wool of the first class, and in addition thereto 35 per centum ad valorem. * * * Flannels composed wholly or in part of wool, valued at above 50 cents per pound, shall be classified and pay the same duty as women's and children's dress goods, coat linings, Italian cloths, and goods of similar character and description provided by this section: * * *.	
		Summary:	
		Valued at not more than 40 cents per pound	22 cents per pound and 30 per cent ad valorem.
		Valued at more than 40 cents and not more than 50 cents per pound.	33 cents per pound and 35 per cent ad valorem.
		Valued at more than 50 but not more than 70 cents per pound.	11 cents per square yard and 50 per cent ad valorem.
		Valued at more than 70 cents per pound	11 cents per square yard and 55 per cent ad valorem.
		Weighing over four ounces per square yard—	
		Valued at more than 50 but not more than 70 cents per pound.	44 cents per pound and 50 per cent ad valorem.
		Valued at more than 70 cents per pound	44 cents per pound and 55 per cent ad valorem.
1913	289	* * * flannels, composed wholly or in chief value of wool, 25 per centum ad valorem; flannels composed wholly or in chief value of wool, valued at above 50 cents per pound, 30 per centum ad valorem.	
		Summary:	
		Valued at not more than 50 cents per pound	25 per cent ad valorem.
		Valued at above 50 cents per pound	30 per cent ad valorem.
1921	19	Wool and hair of the kind provided for in paragraph 18, when advanced in any manner or by any process of manufacture beyond the washed or scoured condition, and manufactures of which wool or hair of the kind provided for in paragraph 18 is the component material of chief value, 45 cents per pound in addition to the rates of duty imposed thereon by existing law.	
		Summary:	
		Valued at not more than 50 cents per pound	45 cents per pound and 25 per cent ad valorem.
		Valued at above 50 cents per pound	45 cents per pound and 30 per cent ad valorem.

COURT AND TREASURY DECISIONS

WOOLENS AND WORSTEDS

The deduction of 5 per cent on goods weighing over 4 ounces per square yard in the proviso to paragraph 380 of the act of 1909 was held to be one-twentieth of the duties and not 5 per cent ad valorem. Auffmordt *v.* United States, 2 Ct. Cust Appls. 481, of 1912. Pekin melange was held dutiable as wool dress goods under paragraph 380 of the act of 1909 rather than as manufactures of wool under paragraph 378. (Abstract 26267, T. D. 31813, of 1911.) Canton cloth, described as "Fawn Canton," consisting of a cloth with a wool weft and a cotton warp, generally used in the manufacture of waterproof cloth, was held dutiable under paragraph 380 of the act of 1909. (Abstract 30639, T. D. 32997, of 1912, following Abstract 26270, T. D. 31813, supra.) Automobile cloth, which was also adapted to use as dress goods and was in fact sometimes so used, was held properly dutiable as "goods of similar description and character" to women's dress goods under paragraph 380 of the act of 1909 and not as wool cloth under paragraph 378. (G. A. 7544, T. D. 34303, of 1914.)

Cloth of mohair and wool invoiced as "sateen" or "standard," with the warp yarn of wool and the weft yarn of mohair and wool, and the wool in the two yarns being more valuable than the mohair, was held to be dutiable under paragraph 288 of the act of 1913, as cloth in chief value of wool and not under paragraph 308 as cloth in chief value of the hair of the Angora goat. (Field *v.* United States, 7 Ct. Cust. Appls. 332, of 1916.)

Green-baize wool cloth, 36, 45, 54, and 72 inches wide and about 30 yards long, claimed to be dutiable as "bockings," was held dutiable as wool cloth under paragraph 288 of the act of 1913, the testimony being insufficient to establish a commercial designation of the term "bockings" in paragraph 301. (Abstract 39843, of 1916.)

Textile fabric, the distinguishing feature of which was an even, unbroken surface, ornamented in the making with figures and designs in colored threads or yarns, was declared to be tapestry and dutiable as cloths or as manufactures of wool under paragraph 288 of the act of 1913 and not as embroidery under paragraph 358. (Sloane *v.* United States, 7 Ct. Cust. Appls. 463, of 1917.) Wool cloth teaseled was held to be dutiable as wool cloth under paragraphs 288 and 308 of the act of 1913. (Abstract 40293, of 1916, following G. A. 7906, T. D. 36403.)

Omission from paragraph 289 of the 1913 act of the words "for underwear" following the word "flannels" in paragraph 379 of the act of 1909 gave rise to considerable litigation. Woolen flannel material used for outer garments, and also for pajamas, etc., was held to be within the commercial meaning of the term "flannels" in this paragraph, and not dutiable as manufactures of wool under paragraph 288 of the act of 1913, nor as wool dress goods under paragraph 290. The testimony showed "flannel" to be defined as a fabric composed of wool, or cotton and wool, or wool and silk, woven in a certain way and having a certain finish, used for skirts and underwear, dressing sacks, and possibly for infants' wear, also for pajamas and trousers. (G. A. 7772, T. D. 35703, of 1915, and Abstract

38781, of 1915.) Woven wool fabrics, reported to be of the character used for women's dress goods (Abstract 38439, of 1915), and French flannels used for underwear and infants' wear (Abstract 38782, of 1915) were likewise classified as flannels, following T. D. 35703, supra. Shirting flannels used for waists, shirts, and infants' wear were also held so classable. (Abstract 39393, of 1916, followed in Abstract 40295, of 1916.)

However, certain wool cloth was held dutiable under paragraph 288 of the act of 1913, the record not showing that the merchandise was included within the commercial meanings of the term "flannels" as found in T. D. 35703, supra. (Abstract 38441, of 1915.) Wool suitings, distinguishable in their characteristics and texture from those found to be flannels in T. D. 35703 and Abstract 39393, and no commercial designation being shown, were also held dutiable as manufactures of wool under paragraph 288. (G. A. 7992, T. D. 36837, of 1916, followed in Abstract 40724, of 1917.) Wool suitings for trousers, etc., were likewise classified. The board pointed out that the sharp conflict in testimony argued against the existence of a commercial designation that was definite, uniform, and general. Although the distinguishing characteristics between flannels and other woolen fabrics were indicated by witnesses, the board said, "Yet it seems that these distinguishing characteristics and differences between goods that are flannels and goods that are not flannels are not apparent from an examination of a particular sample except to an expert in the trade. It would seem, then, in general that no definite or fixed rule or test can be applied to determine whether or not a certain fabric is a flannel, but each case must depend upon the particular testimony presented therein." (Abstract 40403, of 1916.) But in a later case it was held that while paragraph 379 of the tariff act of 1909 was limited to flannels for underwear, its successor, paragraph 289, act of 1913, covered all flannels regardless of use. The Government failed to establish for the word "flannels" a commercial designation different from the common meaning. The decision of the Board of General Appraisers sustaining the collector's classification as cloths composed wholly or in chief value of wool under paragraph 288 of the act of 1913, or as women's and children's dress goods composed wholly or in chief value of wool under paragraph 290, and overruling protests claiming classification as flannels under paragraph 289, was reversed except as to certain items admitted by importer's witnesses not to be flannels. (Connor *v.* United States, 9 Ct. Cust. Appls. 312; followed in many abstract decisions.)

Slasher flannel, used in cotton mills on slasher machines, and the clearer cloth on spinning machines, was found not to come within the meaning of the term "flannels," they having no relation to clothing and being used entirely in connection with machinery. (Abstract 39970, of 1916.)

The form and manner in which the amendments were adopted by the Senate show that the words "upon the wool content thereof" in paragraph 1108, act of 1922, were not intended to limit the application of all specific duties mentioned in said paragraph but only those with which they are directly associated as literally written. G. A. 8905, T. D. 40554, of 1924, followed in Abstract 50245 of 1925, which was affirmed in Brauer *v.* United States, 14 Ct. Cust. Appls. —; T. D. 41577, of 1926, in which the Court of Customs Appeals held that para-

graph 1108, tariff act of 1922, provides for woven fabrics, wholly or in chief value of wool, weighing not more than 4 ounces per square yard: (1) valued at not more than 80 cents per pound; (2) valued at more than 80 cents per pound; (3) with a warp wholly of cotton or other vegetable fiber, without regard to value; that under the rule of *expressio unis est exclusio alterius*, the provision that specific duty shall be taken on the wool content applies to the second clause only, which is borne out by the application of grammatical rules to the paragraph and by its legislative history, and that woven fabrics in chief value of wool having a cotton warp weighing not more than 4 ounces per square yard, valued at more than 80 cents per pound, are dutiable under clause 3 according to the weight of the fabric, and not according to the weight of its wool content.

Bolts of woolen cloth intended to be cut up by the importer and made into suits of clothes to be sold to retail dealers were held subject to marking under section 304 (a) of the act of 1922, and Treasury Decision 39359, wherein it is specifically required that "textile and piece goods must be marked to indicate the country of origin, the mark to appear either directly on the roll, bolt, or piece, or on a tag securely fastened thereto." The marking requirement applies to the goods per se in their condition as imported, and marking to indicate the country of origin is alike required whether the goods are to be used commercially by the importer, as in this case, or sold to others. (T. D. 40547, par. (4), of 1924.)

Cloth composed of common goat hair and wool in equal proportions in weight was held to be dutiable at 50 per cent ad valorem under paragraph 1109 and 45 cents per pound upon the wool content alone, excluding the weight of the common goat hair, the words "45 cents per pound upon the wool content" not applying literally to goat hair. (Abstract 47828, of 1924.)

Woolen fabrics dutiable under paragraph 1109, act of 1922, at a rate depending upon value per pound, were entered as 894 pounds, at a value of $715.20, plus $8 for the containers. The entered value was approved by the appraiser. The collector divided the appraised value, $723.20, by the weight and classified the goods according to the value per pound thus found. His action was held to be correct. It was furthermore held that the appraiser can make but one appraisement, and that neither his later return to the Comptroller of Customs nor his answer to the protest can be regarded as an appraisement, nor can they modify or change the amount or character of the appraisement already made by him. United States *v.* Dorn (13 Ct. Cust. Appls. 130, of 1925), reversing G. A. 8877, T. D. 40446, holding that the value of containers should not be included in arriving at the value per pound of wool cloth.

Woven fabrics in chief value of wool, weighing over 4 ounces per square yard and valued at more than 80 cents per pound, were held dutiable at the 45-cent rate on the weight of the wool content, and not on the net weight of the entire fabric. (Abstract 49472, of 1925.)

Upholstery fabrics of wool and cotton, wool chief value, valued at more than 80 cents per pound and weighing more than 4 ounces to the square yard, imported to be later cut up into chair seats or chair backs, were held to be more specifically described as woven fabrics under paragraph 1109 of the act of 1922 than as manufactures of wool

under paragraph 1119. (G. A. 9035, T. D. 41115, of 1925; affirmed in Rogers *v.* United States, 14 Ct. Cust. Appls. —; T. D. 41552, of 1926.)

The provision in paragraph 1109 for woven woolen fabrics means cloth or material in the piece and not further manufactured. Samples of woolen cloth are articles made from woolen fabrics and are not classable as woolen fabrics under paragraph 1109 but as woolen manufactures not specially provided for under paragraph 1119. (United States *v.* Milbank, 14 Ct. Cust. Appls. —; T. D. 41693, of 1926, followed in Abstract (N) 2484, of 1927.)

PART 2

PILE FABRICS OF WOOL, MOHAIR, ALPACA, ETC., AND MANUFACTURES OF

TARIFF ACT OF SEPTEMBER 21, 1922

PAR. 1110.—Pile fabrics, cut or uncut, whether or not the pile covers the whole surface, made wholly or in chief value of wool, and manufactures, in any form, made or cut from such pile fabrics, 40 cents per pound and 50 per centum ad valorem.

DESCRIPTION

Pile fabrics consist of a foundation cloth covered in whole or in part by short projecting ends or loops made with an extra set of threads. Technically, pile fabrics are divided according to method of construction into two classes: (1) Filling piles, such as corduroy, and (2) warp piles, such as plush and astrachan. In all these the foundation fabric requires its own set of warp and filling threads, and the pile, whether filling or warp, is made from an additional set of threads. In most fabrics made with a pile of wool, mohair, or alpaca the foundation fabric is of cotton or other vegetable fiber. Filling pile is always cut, whereas warp pile may be either cut or loop (uncut).

Wool, because of its lack of resilience and its tendency to felt, is little used as pile. When so employed, for women's cloaks, for hangings, etc., it is usually of the light-shrinking and coarse variety. Pile fabrics of alpaca, like those of wool, are relatively unimportant.

Fabrics made with mohair pile constitute the bulk of the pile fabrics imported under the wool schedule. Under the act of 1913 mohair pile fabrics amounted to about 80 per cent of the total. There is no better material than mohair plush for upholstery; it has great durability, is pleasing in appearance, and it resists the retention of dust. These qualifications have gained great favor in the American automobile industry, which uses large and increasing quantities for upholstery in motor vehicles. Mohair pile fabrics are also used for covering seats in Pullman railway cars, for curtains and portières, for women's and children's cloaks, and for covering teddy bears and other toys.

DOMESTIC PRODUCTION

The production of pile fabrics is not separately recorded by the census but is included with other manufactures of wool. It is known, however, that it constitutes a relatively small part of the wool manufacturing industry. The census of war commodities reported the production of "plush" on 434 looms as 4,329,184 linear yards in 1916 and as 3,975,090 linear yards in 1917. Since the war the increasing popularity of the inclosed automobile has created such a demand for pile fabrics that it is estimated 1,500 looms were engaged in the manufacture of plush in 1925.

The mohair used in the manufacture of plush is partly of foreign and partly of domestic production. The cotton yarns used are mainly domestic. Wool and alpaca are used for pile to a minor extent; there is a small use of other materials such as silk and rayon, particularly spun silk and spun rayon, in mixed pile specialties. The manufacture of plushes and other pile fabrics is conducted chiefly in Maine, Rhode Island, Connecticut, and Pennsylvania. Exports are not separately recorded but are known to be comparatively small.

Methods of production.—The manufacture of mohair plushes and similar pile fabrics is a branch of the worsted industry. The mohair and wool yarns are usually spun on the Bradford system. It is in the weaving and finishing departments that the plush mill differs from the ordinary worsted cloth mill.

Prior to 1867 the manufacture of plushes was confined to France and Germany, where the peculiar looms employed were kept under the closest surveillance. Repeated attempts to procure this machinery abroad were frustrated, and the result was the invention of American patterns. These looms now produce a fabric in every way equal to the best plushes made abroad, and with much greater economy of labor.

IMPORTS

The average annual imports for consumption and duties collected during the operation of the last five tariff acts are compared, in the following table, with imports for consumption and duties collected in 1923, 1924, 1925, and 1926:

Pile fabrics of wool, mohair, etc.—Imports for consumption—Average per year of 365 days, acts of 1890–1922

	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate	Equivalent specific rate
Tariff act of—	*Pounds*				*Per cent*	*Per pound*
1890	154,852	$144,274	$163,216	$0.932	113.13	$1.054
1894	117,498	120,961	60,431	1.029	49.96	.514
1897	16,267	18,457	17,198	1.135	93.18	1.057
1909	11,893	12,216	11,887	1.027	97.31	.999
1913	89,764	126,335	61,401	1.407	48.60	.684
1922—						
Calendar year 1923	246,731	434,437	315,911	1.761	72.72	1.280
Calendar year 1924	122,117	242,148	169,921	1.963	70.17	1.391
Calendar year 1925	129,781	276,716	190,270	2.132	68.76	1.466
Calendar year 1926	243,439	509,017	351,884	2.091	69.13	1.445

The above, taken in connection with the more detailed Table 23, page 139, shows that imports of pile fabrics are normally small, but have fluctuated widely from year to year. Imports in 1892 amounted to 247,565 pounds, valued at $214,267; in 1902 to 3,651 pounds, valued at $4,391; in 1914 to 249,979 pounds, valued at $279,698; in 1919 to 7,365 pounds, valued at $23,074; in 1923 to 246,731 pounds, valued at $434,437; and in 1926 to 243,439 pounds, valued at $509,017. During this period, 1891–1926, the record quantity was attained in 1914 and the record value in 1926.

Pile fabrics partake of the nature of specialties and the demand is more dependent on style than on price, so that the rate of duty is usually a minor factor in influencing imports. Imports were larger

under the high rates of the act of 1890 than under the lower rates of the act of 1894. Under the high rates of the acts of 1897 and 1909 imports were negligible and there was a substantial increase when lower duties were put into effect in 1913, but there was also a substantial increase when higher duties were put into effect with the present act.

Imports of manufactures of pile fabrics were not separately recorded prior to the act of 1913. During that act they averaged annually $47,024 in value (quantity not recorded), dutiable at $20,624, the equivalent ad valorem rate of duty being 43.86 per cent. In the calendar year 1923 imports increased to 101,013 pounds, valued at $180,822, paying duty of $130,816, although the equivalent ad valorem rate of duty had increased to 72.34 per cent. The equivalent specific duty amounted to $1.29 a pound. The substantial increase in these imports tends to show that the rate of duty is a minor factor and that the demand for these goods of foreign manufacture is dependent mainly on style or quality. In 1926 imports were 53,454 pounds, valued at $118,938.

PRICES

The prices of domestic pile fabrics usually follow those of other woven fabrics of wool. Owing to the variation in style from season to season, no prices are available covering a period of years. Imported pile fabrics of wool, mohair, etc., averaged, per pound, $0.932 under the act of 1890, $1.029 under the act of 1894, $1.135 under the act of 1897, $1.027 under the act of 1909, and $1.407 under the act of 1913. Imports in 1925 averaged $2.132 per pound, which compares with $2.068 per pound for imports of woolens and worsteds.

TARIFF HISTORY

The tariff act of 1890, paragraph 396, levied a flat rate of 49½ cents per pound and 60 per cent ad valorem on all pile fabrics of wool. Under the act of 1894, paragraph 283, pile fabrics were made dutiable at the same rate as wool cloths; those valued at not over 50 cents per pound were dutiable at 40 per cent ad valorem, and those valued at more than 50 cents were dutiable at 50 per cent ad valorem. Under the act of 1897, paragraph 366, and the act of 1909, paragraph 378, pile fabrics were again dutiable at the same rates as cloths. The latter act, in paragraph 443, specifically stated that plushes, etc., should be classified as manufactures of wool, but manufactures of wool, n. s. p. f., were dutiable in the same paragraph (378) and at the same rates of duty as cloths. The rates on pile fabrics in the acts of 1897 and 1909 were accordingly as follows: On those valued at not more than 40 cents per pound, 33 cents per pound and 50 per cent ad valorem; on those valued at more than 40 but not more than 70 cents per pound, 44 cents per pound and 50 per cent ad valorem; and on those valued at more than 70 cents per pound, 44 cents per pound and 55 per cent ad valorem. Under the act of 1913, paragraph 288, pile fabrics of wool were dutiable at 40 per cent ad valorem and those made of mohair, alpaca, etc., paragraph 309, at 45 per cent ad valorem.

The conditions affecting the adjustment of rates of duty on felt goods, and, to a lesser extent, on blankets, are true of pile fabrics.

These fabrics are seldom made of all wool or mohair; the warp is usually of cotton or other vegetable fiber; therefore they are not entitled to the 5½ cents compensatory allowance on all-wool cloths. The act of 1913, in paragraph 1111, levied a flat rate of 31 cents per pound and 35 per cent ad valorem on all pile fabrics of wool or mohair and on all manufactures made of the same such fabrics.

COMPARATIVE CONDITIONS

England is the main source of our imports of pile fabrics. The factors which govern the manufacture of woolen and worsted cloths have but minor application to pile fabrics. The condition which most adversely affects the American manufacturer is the difference in wage rates. The labor cost per unit of pile fabrics averages higher than for a woolen or worsted cloth of equal value, which is of some advantage to the foreign producer. The construction of pile fabrics admits itself to the production of novelties in a great variety of designs, and this also is of advantage to the foreign manufacturer, as a part of the historical prestige possessed in a degree in the general excellence of foreign fabrics and styles.

Rates of duty

PILE FABRICS OF WOOL OR HAIR, ETC.

Act of—	Par.	Tariff classification or description	Rates of duty
1894	204	On * * * plushes and other pile fabrics, * * * composed wholly or in part of wool, worsted, the hair of the camel, goat, alpaca, or other animals the duty per pound shall be four and one-half times the duty imposed by this act on a pound of unwashed wool of the first class, and in addition thereto 40 per centum ad valorem.	49½ cents per pound and 60 per cent ad valorem.
1897	256	* * * and on all manufactures, composed wholly or in part of wool, worsted, the hair of the camel, goat, alpaca, or other animals * * * Valued at not over 30 cents per pound Valued at more than 30 cents per pound	40 per cent ad valorem. 50 per cent ad valorem.
1909	378	On * * * all manufactures of every description made wholly or in part of wool, not specially provided for in this act, valued at not more than 40 cents per pound, the duty per pound shall be three times the duty imposed by this act on a pound of unwashed wool of the first class, valued at above 40 cents per pound and not above 70 cents per pound, the duty per pound shall be four times the duty imposed by this act on one pound of unwashed wool of the first class and in addition thereto upon all the foregoing, 50 per centum ad valorem; valued at over 70 cents per pound, the duty per pound shall be four times the duty imposed by this act on one pound of unwashed wool of the first class and 55 per centum ad valorem. Summary: Valued at not more than 40 cents per pound Valued at more than 40 but not more than 70 cents per pound Valued at more than 70 cents per pound	55 cents per pound and 50 per cent ad valorem. 66 cents per pound and 50 per cent ad valorem. 66 cents per pound and 55 per cent ad valorem.

Rates of duty—Continued

PILE FABRICS OF WOOL, MOHAIR, ETC.—Continued

Act of—	Par.	Tariff classification or description	Rates of duty
1909	443	Plushes * * * and manufactures thereof, composed of the hair of the camel, goat, alpaca, or any animal, combined with wool, vegetable fiber, or silk, shall be classified and dutiable as manufactures of wool.	
		Summary:	
		Valued at not more than 40 cents per pound	33 cents per pound and 50 per cent ad valorem.
		Valued at more than 40 but not more than 70 cents per pound.	44 cents per pound and 50 per cent ad valorem.
		Valued at more than 70 cents per pound	44 cents per pound and 55 per cent ad valorem.
1913	288	* * * plushes, velvets, and all other pile fabrics, cut or uncut, woven * * *, whether or not the pile covers the entire surface, made wholly or in chief value of wool, and articles made wholly or in chief value of such plushes, velvets, or pile fabrics.	40 per cent ad valorem.
	309	Plushes, velvets, and all other pile fabrics, cut or uncut, woven * * *, whether or not the pile covers the entire surface, made wholly or partly of the hair of the Angora goat, alpaca, or other like animals, and articles made wholly or in chief value of such plushes, velvets, or pile fabrics.	45 per cent ad valorem.
1921	19	Wool and hair of the kind provided for in paragraph 18, when advanced in any manner or by any process of manufacture beyond the washed or scoured condition, and manufactures of which wool or hair of the kind provided for in paragraph 18 is the component material of chief value, 45 cents per pound in addition to the rates of duty imposed thereon by existing law.	
		Summary:	
		Made of wool	45 cents per pound and 40 per cent ad valorem.
		Made of mohair	45 cents per pound and 45 per cent ad valorem.
1922	1110	Pile fabrics, cut or uncut, whether or not the pile covers the whole surface, made wholly or in chief value of wool, and manufactures, in any form, made or cut from such pile fabrics.	40 cents per pound and 50 per cent ad valorem.

COURT AND TREASURY DECISIONS

Pincushions composed of mohair and wool were held to be dutiable at 40 cents per pound and 50 per cent ad valorem under paragraph 1110 rather than as toys under paragraph 1414 of the act of 1922. (Abstract 47289 of 1924.)

Perfume containers in the form of bears made from wool pile fabrics and other material were held dutiable under paragraph 1110 of the act of 1922 at 40 cents per pound and 50 per cent ad valorem and not under paragraph 1119 at 50 per cent ad valorem nor under paragraph 921 at 40 per cent ad valorem. (Abstract 1375 of 1926.)

PART 3

WOOL BLANKETS AND SIMILAR ARTICLES, INCLUDING CARRIAGE AND AUTOMOBILE ROBES AND STEAMER RUGS, MADE OF BLANKETING

TARIFF ACT OF SEPTEMBER 21, 1922

PAR. 1111.—Blankets and similar articles, including carriage and automobile robes and steamer rugs, made of blanketing, wholly or in chief value of wool, not exceeding three yards in length, valued at not more than 50 cents per pound, 18 cents per pound and 30 per centum ad valorem; valued at more than 50 cents but not more than $1 per pound, 27 cents per pound and 32½ per centum ad valorem; valued at more than $1 but not more than $1.50 per pound, 30 cents per pound and 35 per centum ad valorem; valued at more than $1.50 per pound, 37 cents per pound and 40 per centum ad valorem.

DESCRIPTION

A wool blanket is a woven heavy fabric, made of woolen yarn or a mixture of cotton and woolen yarn, fulled or shrunken to a high degree, and gigged or napped until the individual fibers of the component yarn are raised and form a pile-like surface on both sides of the cloth. The fundamental characteristics of a blanket are: The heaviness or thickness of the goods; the closeness or even the obliteration of the weave as a result of the fulling operation; and the high nap on both sides of the fabric. Under this definition there would be embraced under the word "blanket" certain types of carriage and automobile robes and of steamer rugs, and the blanket material, or blanketing, which is woven in the piece and later cut up to make bathrobes, overcoats, and heavy clothing. On the other hand, certain other types of carriage and automobile robes and steamer rugs, and the fabrics known as "machine blankets," used in cushioning the cylinders of calico printing machines, would be excluded under this definition. They have less nap, or they are not so close-woven, heavy, and thick. Many steamer rugs are mere woolen cloths, and the so-called "machine blankets" approach a flannel. The line of demarcation is hard to draw; therefore, paragraph 1111 of the tariff act of 1922 is worded so as to include blankets and similar articles, including carriage and automobile robes and steamer rugs made of blanketing, wholly or in chief value of wool, not exceeding 3 yards in length. Machine blankets, and all other blanketing material exceeding 3 yards in length, are classified as "woven fabrics of wool," according to weight.

DOMESTIC PRODUCTION

Quantity.—The American manufacture of bed blankets did not vary greatly, in quantity of production, in the decades prior to the war. In the period 1889 to 1904 production ranged between 18,000,000 and 20,000,000 square yards; in 1909 there was a decrease to 16,602,502 square yards, while in 1914, probably on account of foreign

military orders in that year, the yardage rose to 28,400,973. In 1919 production amounted to 25,083,256 square yards, but in 1921 it declined to 19,548,688 square yards. The census of 1923 showed a yardage of 32,912,660 and in 1925 production amounted to 34,251,771 square yards. Compared with the census of 1923, all-wool bed blankets declined 7 per cent and cotton-mixed 9 per cent, while the cotton-warp variety increased 24 per cent.

Of horse blankets, production increased between 1889 and 1904 from 5,507,074 to over 7,500,000 square yards, but it, too, fell off in 1909, to a little over 5,000,000 square yards, and rose in 1914 to a little over 8,000,000. In 1919 production amounted to only 1,695,715 and in 1921 to 1,942,492 square yards. In 1923 production rose to 2,475,356 and declined to 1,409,513 square yards in 1925. The production of carriage robes declined from 3,433,712 square yards in 1909 to 500,144 in 1925.

One significant feature of these figures is the drop in 1909, a decline which available data indicate might well have continued in 1914 had the war not intervened. This decline is attributable, so far as bed blankets are concerned, to the competition of all-cotton blankets, mainly of domestic manufacture, as explained more fully below. Another feature is the marked decline in the production of horse blankets and carriage robes between 1914 and 1925 largely due to the increasing replacement of horses and carriages by automobiles.

It is important to note the large proportion of cotton warp and union goods produced. In the pre-war period these two together formed over two-thirds of the production of bed blankets and over nine-tenths of the production of horse blankets. War orders sent the proportions still higher, to 75 and 99 per cent, respectively. In 1925, 68 per cent of the total production of bed blankets was of the cotton warp or union type.

An important additional type of blanket which should be mentioned is that made wholly of cotton. It falls outside the scope of this survey but should be noted as a powerful competitor of the woolen, or chiefly woolen, fabric. Cotton blankets have been manufactured for years, but only within the last ten or fifteen years, since the invention of a new napping machine, have they become sharply competitive with woolen blankets. This machine raises a high thick nap on both sides of the goods, a nap such as had not before been possible to obtain. Such blankets cut severely into the trade in medium to low-grade woolen, or mainly woolen, blankets, so much so that since 1919 the domestic production of cotton blankets, in both quantity and value, exceeded the production of wool and part wool blankets. They suffer from comparison in one respect, namely, that the nap does not hold up well after washing, as does that of good woolen blankets; they are, however, lighter and cheaper.

A comparison of cotton with wool blankets as regards the average ounces per square yard and the average value per square yard, based on the 1925 census figures, is herewith shown:

Blankets	Ounces per square yard	Value per square yard	Blankets	Ounces per square yard	Value per square yard
All wool	10.09	$0.991	Cotton mixed	9.99	$0.640
Cotton warp	9.92	.492	All cotton	7.52	.321

No statistics are available, prior to 1919, for the production of all-cotton blankets. The following table shows the domestic production of all-wool, cotton-warp, cotton-mixed, and all-cotton bed blankets for the census years 1919, 1921, 1923, and 1925:

Domestic production of bed blankets, 1919–1925

Bed blankets	1919	1921	1923	1925
All wool:				
Pounds	4,975,438	5,375,567	7,818,992	6,987,808
Square yards	5,916,197	6,753,613	11,871,816	11,083,923
Value	$6,897,923	$6,505,336	$9,320,873	$10,989,370
Cotton warp:				
Pounds	7,603,761	6,854,942	8,186,606	9,346,463
Square yards	9,244,134	9,295,825	12,186,706	15,070,065
Value	$7,289,253	$6,072,579	$6,138,487	$7,410,534
Cotton mixed:				
Pounds	7,459,554	2,625,633	5,500,253	5,058,469
Square yards	9,922,925	3,499,250	8,854,138	8,097,783
Value	$8,616,905	$2,574,977	$5,286,373	$5,174,672
All cotton:				
Pounds	42,320,816	33,222,299	38,333,215	43,278,256
Square yards	96,620,556	91,519,600	88,060,112	92,077,330
Value	$32,639,927	$21,506,676	$24,712,877	$29,547,532

Table 25, page 140, shows the domestic production of bed blankets, horse blankets, and carriage robes, wholly or in chief value of wool, for the census years 1909 to 1925, inclusive.

Materials used.—Yarns employed for weaving wool blankets are wool, merino,[1] and cotton. The latter is used only for the warp, often to give strength to an otherwise flimsy fabric. Woolen yarns made wholly of new wool are employed exclusively only in the manufacture of the best blankets. Few mills confine themselves to new wool, only the small mills in rural communities, especially those near the chief wool-raising regions. The larger mills employ, in addition, cotton, wool noils, waste, recovered wool fiber, and sometimes cattle hair or other substitutes. Most of the woolen yarns used in blankets have an admixture of one or more of these other materials, and some contain no new wool at all. The poorer grades are used mainly as filling in a blanket which has a cotton warp.

An inquiry made in some detail by the Tariff Commission as to the proportions of the several raw materials used in the manufacture of wool blankets showed that in many mills new wool constituted a small percentage of the total. For instance, a mill making a wide variety of products—bed and horse blankets and carriage robes, all wool, merino, and cotton warp—used in a year of normal business 31 per cent new wool, 30 per cent noils and wool waste, 15 per cent recovered wool fiber, 19 per cent cotton, and 5 per cent purchased cotton yarn. Two other mills, making cotton-warp blankets, used new wool only to the extent of 15 per cent of their total raw materials. A manufacturer of horse blankets reported that he used no new wool, only cattle and other animal hair, recovered wool fiber, and cotton yarn.

The manufacture of wool blankets is confined almost entirely to the woolen branch of the industry. The materials used in blanket

[1] Yarn made of wool and cotton mixed.

manufacture are not separately stated by the census but are included with the other materials used by the woolen mills, shown in Table 3, page 112.

METHODS OF PRODUCTION

The choice and the blending of the raw materials are important in the manufacture of blankets. A good quality of material is necessary to secure a good fabric, but a careful adjustment of the mixture sometimes permits the use of cheap materials in the manufacture of a well-wearing blanket. Skill and long experience are necessary in the preparation of an economical yet satisfactory "mix."

Manufacturing operations are similar to those used in the manufacture of other heavy woolen fabrics and do not present any peculiar difficulties. The designs used in the past were usually simple and did not vary from season to season as do those for cloth. In recent years, however, novelty blankets have been more in demand and designing has become a factor of more importance. Since weight is desirable in blankets, coarse yarns only are required. These coarse yarns, loosely twisted, are turned out cheaply and efficiently by American mills. Only the simplest weaves, either the plain or twill, are customary, since the weave structure is bound to be concealed or obliterated in the finishing process.

The looms used in weaving blankets are similar to those used in the weaving of woolens except that they are wider—usually more than 100 inches reed space. Jacquard looms are necessary in the production of blankets made with fancy borders. During the war carpet looms were used for weaving military blankets.

The finishing processes, chief among which are fulling and gigging, are of primary importance in the manufacture of blankets. Fulling is a process of shrinking and felting the fabric, giving it greater thickness and more weight to a given area. It is accomplished in large, closed boxes within which the fabric is moistened with soap and water and passed between rollers or under a huge hammer. This operation consolidates the fabric, and, if carried to a certain point, bursts the constituent yarns and destroys the weave structure. It decreases the area of the cloth, usually by 20 to 25 per cent. After it is fulled, the fabric is passed through the gigging machine, in which the individual fibers are raised by means of fine teeth on cylinders, until a high thick nap on both sides of the fabric is secured. In carriage and automobile robes, this operation raises the fibers of the cattle hair in the filling yarn into the plushlike nap which characterizes these goods.

GEOGRAPHIC DISTRIBUTION

Blanket manufacture is one of the most widely distributed branches of the American wool industry. It was undertaken early by frontier communities, because of the urgent need for its products and because of the supply of wool usually available. The large-scale blanket manufacturers are now located in Massachusetts and Pennsylvania, although Ohio, Indiana, and California also produce considerable quantities in fair-sized mills. With the march of the frontier across the continent, blanket manufacture was established in most States. Small mills are scattered from North Carolina to Washington. These small mills still exist, either through availability of wool, as in far Western States, or

[illegible] over 4 ounces per square yard, [illegible] value. These figures would indicate [illegible] was being imported under the act of [illegible] at more than $1.50 per pound, however, [illegible] pounds in 1923, 45,082 pounds in 1924, [illegible]. These quantities were in excess of the [illegible] imports prior to the war. In 1923 there were [illegible] at $14,392; in 1924, 37,039 pounds, valued at [illegible] 12,484 pounds, valued at $5,471, brought in [illegible] not more than 50 cents per pound. These were [illegible] surplus Army stocks that were sold abroad at less [illegible].

[illegible] made at the appraisers' stores in New York dis- [illegible] that large quantities of low-priced blankets were being [illegible] under paragraph 1430 of the tariff act of 1922, dutiable at [illegible] ad valorem. Imports of wool embroideries and embroid- [illegible] from September 22, 1922, to December 31, 1926, were [illegible]:

Year	Quantity	Value	Unit value	Rate of duty
	Pounds			*Per cent*
[illegible]	73,978	$332,330	$4.358	75
[illegible]	127,885	514,713	4.025	75
[illegible]	1,291,426	753,611	.584	75
[illegible]	734,219	331,229	.451	75
[illegible]	159,224	45,185	.284	75

[1] Sept. 22 to Dec. 31, 1922. [2] Includes embroidered blankets only.

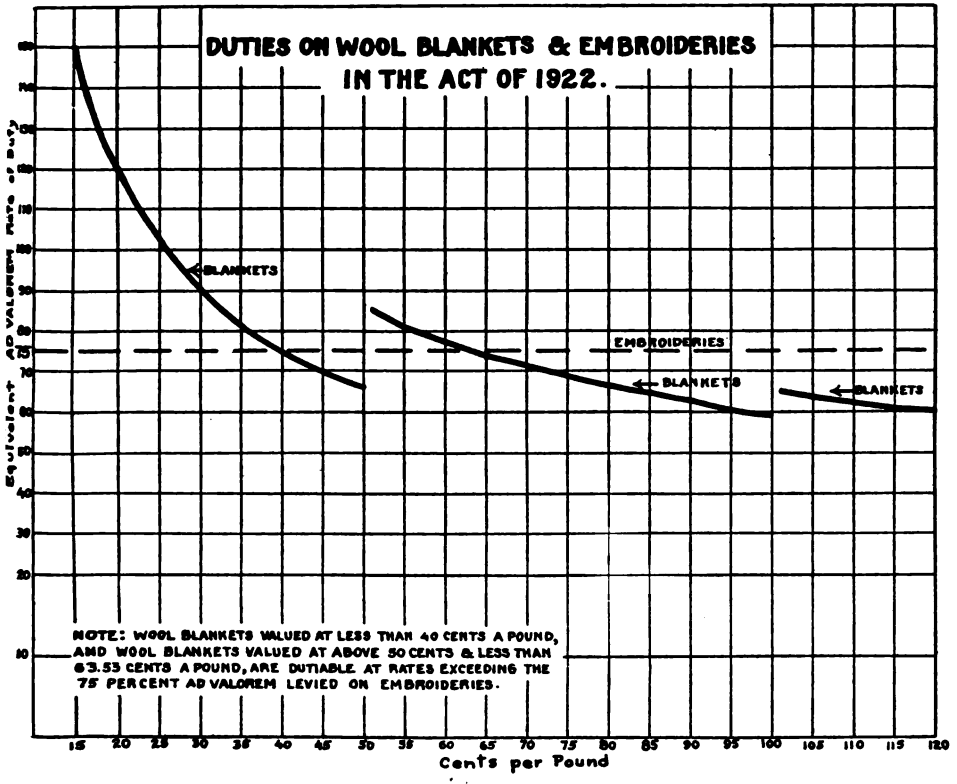
Paragraph 1430 of the tariff act of 1922 includes "all fabrics and articles embroidered in any manner by hand or machinery, whether with a plain or fancy initial, monogram, or otherwise." It will be noted that the average value per pound of wool embroideries and embroidered articles in 1923 was $4.025; in 1924, $0.584; and in 1925, $0.451. This increase in quantity and decrease in value per unit of the 1924 and 1925 imports was caused by the embroidering of an initial on one corner of low-priced blankets and entering them as "articles embroidered" dutiable at 75 per cent ad valorem.

The chart on page 103 is a graphic illustration of the equivalent ad valorem rates of duty levied on blankets in paragraph 1111 and of the ad valorem rate of duty levied on embroidered articles in paragraph 1430. This shows that on wool blankets valued at less than 40 cents per pound, and on wool blankets valued at more than 50 and not more than 63.53 cents per pound, it will pay the importer to embroider an initial on the blanket in order to get the embroidered-article rate of 75 per cent ad valorem. At any other value the equivalent ad valorem rate levied on blankets is lower than the rate levied on embroidered articles. The question of undervaluation has been investigated by agents of the Treasury Department, who report that the appraised value is in accordance with law.

The tariff acts of 1890 and 1913 related to "blankets" without specification as to length. Under the acts of 1894, 1897, and 1909 blankets over 3 yards in length were dutiable as cloths. Table 26, page 140, shows the ratio of imports of blankets not over 3 yards in

length to domestic production in the census years 1889 to 1925 and the ratio of exports to production in 1919 and 1921. Table 27, page 141 shows imports of blankets not over 3 yards in length from October 6, 1890, to December 31, 1925. Table 15d, page 132, shows imports of blankets over 3 yards in length, and therefore dutiable as cloths, recorded during the period of the tariff acts of 1894, 1897, and 1909.

Sources of imports.—Imports of wool blankets by countries are not shown in official trade returns of the United States. Interviews with the trade and with customs officials, supplemented by an analysis of invoices at New York by a representative of the Tariff Commission, disclose, however, that the leading sources of our imports are the


DUTIES ON WOOL BLANKETS & EMBROIDERIES
IN THE ACT OF 1922.
Equivalent Ad Valorem Rate of Duty
BLANKETS
EMBROIDERIES
BLANKETS
BLANKETS
NOTE: WOOL BLANKETS VALUED AT LESS THAN 40 CENTS A POUND, AND WOOL BLANKETS VALUED AT ABOVE 50 CENTS & LESS THAN 63.53 CENTS A POUND, ARE DUTIABLE AT RATES EXCEEDING THE 75 PER CENT AD VALOREM LEVIED ON EMBROIDERIES.
10
20
30
40
75
15 20 25 30 35 40 45 50 55 60 65 70 75 80 85 90 95 100 105 110 115 120
Cents per Pound

United Kingdom, Czechoslovakia, Austria, and Germany—about in the order given.

Nature of imports.—Prior to the year 1923 imports of wool blankets consisted largely of high-grade and novelty goods. It is true, as stated above, that lower grade blankets were imported following the reduction of the duty in 1913, and that even the upward trend in grade resulting from the enactment of the emergency law has been broken by an occasional shipment of the cheaper variety. It was found upon inquiry that no imports whatever of horse blankets have come into the port of New York in recent years, and that practically all imports (aside from steamer rugs, automobile robes, etc.) consisted

of high-grade bed blankets. Most of these blankets are wholly or very largely pure wool; many of them are woven as double cloth, with a different color on each side. Those imported from Czechoslovakia are mainly of this type of luxury goods.

Considerable quantities of steamer rugs, automobile robes, etc., are also brought in. Most of them come from the United Kingdom, perhaps the largest portion from Ireland, but some also from England. In general importers make no distinction between steamer rugs and automobile or carriage robes. Perhaps the most obvious difference is the finishing of the edges. The greater number of steamer rugs are made with fringed edges, whereas the automobile robes are usually bound on all sides and can be utilized as bed blankets. Indeed, both types of goods are put to widely varying uses. Many rugs, particularly the lighter-weight ones, are used for women's capes, shawls, and coats. Some are made up in solid colors; many of them in plaids or with plaid backs. As a rule the plaid-back goods are sold at a higher price. Importers state that in general their goods possess an advantage in coloring and range and that there is direct competition with domestic goods only in the lower and medium grades.

COMPETITIVE CONDITIONS

American manufacturers have several advantages in the production of blankets in competition with foreigners.

(*a*) The manufacturing problem is simple. The material is spun into low-count yarn and the weaving is not intricate. The finishing, while important for the development of quality, is not a difficult operation. In none of these phases is the American producer under a handicap, except in making the finest goods. Indeed, it is for the most part the type of work for which our factories are particularly well fitted.

(*b*) Comparatively little skilled labor is required and still less of that long-experienced labor required for the production of high-grade cloths and dress goods.

(*c*) There is no problem of foreign styles or prejudice in favor of foreign goods such as affects the cloth and dress goods trade.

(*d*) Production is well dispersed. The smaller mills, scattered through the States, many of which are not normally of the wool manufacturing group, and possessing such advantages as propinquity to wool supplies or special favor in a local market, are not much exposed to foreign competition. Only those mills of the Eastern States which do a large-scale business are so exposed, and they are the more efficient producers.

The conclusion seems warranted, therefore, that the danger of an inundation of foreign blankets under the tariff of 1922 is not great. The increase in quantity and value of blankets imported in 1923 was only a temporary problem, due largely to the sale of excess army stocks that sold far below cost.

Certain specially high-grade articles will probably continue to come in, goods in which longer and wider experience in the selection and blending of raw materials, and greater care and labor in the production of a superior finish give the foreigner some advantage.

Under the present tariff law greater competition arises from the domestic all-cotton blanket than from the foreign wool blanket.

The cotton blanket has been a severe competitor in the past and may continue to be. As already shown, the domestic production of all-cotton blankets exceeded that of woolen blankets in 1919, 1921, 1923, and 1925 not only in quantity but in value. With the increasing use of furnaces for heating houses, warmth has been a less important factor, while the importance of lightness and cheapness has loomed larger. Even as to warmth, the difference between wool and cotton blankets is greatly exaggerated.

TARIFF HISTORY

The acts of 1890, 1897, 1909, and 1922 provided compound duties for blankets. In all four acts the specific portion of the rate was intended as a compensatory duty for that levied on raw wool and was based thereon. The act of 1890 divided blankets into four classes, according to value, and provided specific rates of 16½, 22, 33, and 38½ cents per pound, respectively, and additional ad valorem duties of 30 per cent for the first class, 35 per cent for the second and third, and 40 for the last. The duties of the acts of 1897 and 1909 were identical; the three classes provided for bore specific duties of 22, 33, and 33 cents, and additional ad valorem rates of 30, 35, and 40 per cent, respectively. The act of 1922 classified blankets and similar articles, including carriage and automobile robes and steamer rugs made of blanketing, into four classes, according to value, and provided specific rates of 18, 27, 30, and 37 cents per pound, respectively, and additional ad valorem duties of 30 per cent for the first class, 32½ for the second, 35 per cent for the third, and 40 per cent for the last. In the acts of 1894, 1909, and 1922 blankets over 3 yards in length did not fall under these duties but were provided for as cloths at higher rates of duty.

The act of 1894 provided ad valorem rates of 25, 30, and 35 per cent on wool blankets, classified according to value. In 1913 a single ad valorem rate of 25 per cent (par. 289) was enacted for wool blankets without regard to length or value; in 1921 an additional duty of 45 cents per pound was imposed upon blankets (as upon other wool manufactures).

Rates of duty

WOOL BLANKETS

Act of—	Par.	Tariff classification or description	Rates of duty
1890	393	On blankets, * * * composed wholly or in part of wool, the hair of the camel, goat, alpaca, or other animals, valued at not more than 30 cents per pound, the duty per pound shall be the same as the duty imposed by this act on one pound and one-half of unwashed wool of the first class, and in addition thereto 30 per centum ad valorem; valued at more than 30 and not more than 40 cents per pound, the duty per pound shall be twice the duty imposed by this act on a pound of unwashed wool of the first class; valued at more than 40 cents and not more than 50 cents per pound, the duty per pound shall be three times the duty imposed by this act on a pound of unwashed wool of the first class; and in addition thereto * * * 35 per centum ad valorem. On blankets * * * composed wholly or in part of wool, the hair of the camel, goat, alpaca, or other animal, valued at more than 50 cents per pound, the duty per pound shall be three and a half times the duty imposed by this act on a pound of unwashed wool of the first class, and in addition thereto 40 per centum ad valorem.	

Rates of duty—Continued

WOOL BLANKETS—Continued

Act of—	Par.	Tariff classification or description	Rates of duty
1890	393	Summary:	
		Valued at not more than 30 cents per pound	16½ cents per pound and 30 per cent ad valorem.
		Valued at more than 30 but not more than 40 cents per pound.	22 cents per pound and 35 per cent ad valorem.
		Valued at more than 40 but not more than 50 cents per pound.	33 cents per pound and 35 per cent ad valorem.
		Valued at more than 50 cents per pound	38½ cents per pound and 40 per cent ad valorem.
1894	282	On blankets, * * * composed wholly or in part of wool, the hair of the camel, goat, alpaca, or other animals:	
		Valued at not more than 30 cents per pound	25 per cent ad valorem.
		Valued at more than 30 and not more than 40 cents per pound.	30 per cent ad valorem.
		Valued at more than 40 cents per pound	35 per cent ad valorem.
		Provided, That on blankets over three yards in length the same duties shall be paid as on woolen and worsted cloths, * * *.	
1897	367	On blankets, * * *, composed wholly or in part of wool, valued at not more than 40 cents per pound, the duty per pound shall be the same as the duty imposed by this Act on two pounds of unwashed wool of the first class, and in addition thereto 30 per centum ad valorem; valued at more than 40 cents and not more than 50 cents per pound, the duty per pound shall be three times the duty imposed by this Act on one pound of unwashed wool of the first class, and in addition thereto 35 per centum ad valorem. On blankets composed wholly or in part of wool, valued at more than 50 cents per pound, the duty per pound shall be three times the duty imposed by this Act on one pound of unwashed wool of the first class, and in addition thereto 40 per centum ad valorem. * * *: *Provided*, That on blankets over three yards in length the same duties shall be paid as on cloths.	
		Summary:	
		Valued at not more than 40 cents per pound	22 cents per pound and 30 per cent ad valorem.
		Valued at more than 40 but not more than 50 cents per pound.	33 cents per pound and 35 per cent ad valorem.
		Valued at more than 50 cents per pound	33 cents per pound and 40 per cent ad valorem.
1909	379	(Wording and rates same as in par. 367 of the act of 1897.)	
1913	289	Blankets * * * composed wholly or in chief value of wool.	25 per cent ad valorem.
1921	19	Wool and hair of the kind provided for in paragraph 18, when advanced in any manner or by any process of manufacture beyond the washed or scoured condition, and manufactures of which wool or hair of the kind provided for in paragraph 18 is the component material of chief value, 45 cents per pound in addition to the rates of duty imposed thereon by existing law.	45 cents per pound and 25 per cent ad valorem.
1922	1111	Blankets and similar articles, including carriage and automobile robes and steamer rugs, made of blanketing, wholly or in chief value of wool, not exceeding three yards in length.	
		Valued at not more than 50 cents per pound	18 cents per pound and 30 per cent ad valorem.
		Valued at more than 50 cents but not more than $1 per pound.	27 cents per pound and 32½ per cent ad valorem.
		Valued at more than $1 but not more than $1.50 per pound.	30 cents per pound and 35 per cent ad valorem.
		Valued at more than $1.50 per pound	37 cents per pound and 40 per cent ad valorem.

Court and Treasury Decisions

WOOL BLANKETS AND SIMILAR ARTICLES

Lap robes, steamer rugs, and auto rugs, of mixed colors, some with fringed ends and some with bound edges, used as coverings at seacoast resorts, in automobiles and carriages, on couches, and in hospitals and sanitariums, were not dutiable as blankets under paragraph 289 of the act of 1913, but as woolen manufactures under para-

graph 288. The word "blanket" is used as meaning a heavy cover, with a thick, soft nap on both sides, for a bed or a horse. (Riley *v.* United States, 8 Ct. Cust. Appls. 116 of 1917.) Mexican woolen blankets called "Zerapes," which, although fancy and decorative, are used principally as couch and bed covers and by Indians as garments, were held properly classified as blankets under paragraph 289 of the act of 1913 and not as manufactures of wool under paragraph 288. (G. A. 8113, T. D. 37434, of 1917; but see Abstract 43437 of 1919, holding the evidence insufficient to sustain the importer's claim in the latter case.)

Automobile robes or steamer rug composed of a heavy loosely woven fabric having a nap and conforming to the definition of blanketing were held on the record properly classified under paragraph 1111 of the act of 1922, and not as manufactures of wool under paragraph 1119. (Abstract 47030 of 1924.)

Blanketing material about 5 yards long which might be cut into two blankets, but which as imported consisted of one blanket without any line of demarcation to separate it into two, was held to be one blanket and not two blankets, and dutiable as manufactures of wool under paragraph 1119 of the act of 1922 and not under paragraph 1111 nor under paragraphs 1108 or 1109, notwithstanding that 50 per cent of these articles are after importation cut up and made into cloths. (Abstract 51381 of 1926; appeal pending in Court of Customs Appeals: T. D. 41521.)

APPENDIX

STATISTICAL TABLES

STATISTICAL TABLES

TABLE 1.—*Summary of the woolen-goods industry of the United States 1889–1925*

[Source: Bureau of the Census]

	1925	1923	1921	1919	1914
Number of establishments	503	513	493	560	501
Persons engaged	71,044	76,294	59,949	67,020	51,631
Proprietors and firm members	150	201	283	258	316
Salaried employees	3,838	3,685	3,232	3,805	[1] 2,150
Wage earners (average number)	67,056	72,408	56,434	62,957	49,165
Primary horsepower	193,080	180,657	(2)	172,947	134,597
Capital	(2)	(2)	(2)	$273,973,670	$107,871,742
Salaries and wages	$94,672,651	$99,629,317	$72,940,398	79,736,922	27,726,892
Salaries	12,236,614	12,315,609	10,047,248	13,141,096	3,522,413
Wages	82,436,037	87,313,708	62,893,150	66,595,826	24,204,479
Paid for contract work	1,476,910	3,318,996	1,212,384	1,198,862	395,915
Rent and taxes	(2)	(2)	(2)	16,791,225	937,255
Cost of materials	219,618,330	201,547,430	120,275,820	217,965,333	63,696,042
Value of products	361,524,034	364,287,817	230,944,847	364,896,590	103,815,905
Value added by manufacture [3]	141,905,704	162,740,387	110,669,027	146,931,257	40,119,863

	1909	1904	1899	1889
Number of establishments	587	792	1,035	1,311
Persons engaged	54,294	75,224	71,139	79,351
Salaried employees	[1] 2,111	[1] 2,477	2,246	2,436
Wage earners (average number)	52,183	72,747	68,893	76,915
Capital	$120,317,070	$140,302,488	$124,386,262	$130,989,940
Salaries and wages	25,897,243	32,258,411	27,691,054	28,478,931
Salaries	3,322,068	3,430,855	2,934,048	2,339,737
Wages	22,575,175	28,827,556	24,757,006	26,139,194
Cost of materials	65,651,634	87,830,825	71,011,956	82,270,335
Value of products	107,118,858	142,196,658	118,430,158	133,577,977
Value added by manufacture [3]	41,467,224	54,265,833	47,418,202	51,307,642

[1] Includes proprietors and firm members.
[2] Figures not available.
[3] Value of products less cost of materials.

TABLE 2.—*Wool used in the woolen-goods industry 1879–1919*

[Source: Bureau of the Census]

Year	Quantity, in condition purchased			Per cent of total	
	Total	Domestic	Foreign	Domestic	Foreign
	Pounds	*Pounds*	*Pounds*		
1919	105,792,290	63,859,091	41,933,199	60.4	39.6
1914	78,873,319	62,236,522	16,636,797	78.9	21.1
1909	87,037,951	73,514,264	13,523,687	84.5	15.5
1904	157,335,727	132,656,502	24,679,225	84.3	15.7
1899	150,200,616	127,678,662	22,521,954	85.0	15.0
1889	185,307,944	168,485,806	16,822,138	90.9	9.1
1879	197,524,955	177,042,288	20,482,667	89.6	10.4

TABLE 3.—*Quantity and value of materials used in the domestic woolen-goods industry 1909–1919*

[Source: Bureau of the Census]

	Quantity			Value			Per cent of increase, 1909–1919 [1]	
	1919	1914	1909	1919	1914	1909	Quantity	Value
	Pounds	*Pounds*	*Pounds*					
Total value				$217,965,333	$63,696,042	$65,651,634		
Wool:								
In condition purchased	105,792,290	78,873,319	87,037,951	95,536,031	23,476,191	27,429,030	21.5	248.3
Domestic	63,859,091	62,236,522	73,514,264	59,940,553	19,312,679	23,779,436	−13.1	152.1
Foreign	41,933,199	16,636,797	13,523,687	35,595,478	4,163,512	3,649,594	210.1	875.3
Equivalent in scoured condition	86,547,717	58,693,405	60,126,473				43.9	
Mohair and camel, alpaca and vicuna hair	1,316,941	2,270,349	1,290,055	1,570,100	613,729	346,634	2.1	353.0
Other animal hair	11,296,996	13,928,703	16,429,808	1,649,803	993,554	848,178	−31.2	94.5
Cotton	14,629,920	23,915,496	15,801,394	4,781,781	2,531,409	1,926,419	−7.4	148.2
Rags, clippings, etc.	45,753,399	58,745,594	38,387,554	11,578,720	4,717,847	2,691,458	19.2	330.2
Recovered wool fiber	31,416,145	25,960,307	20,118,305	12,821,342	3,500,297	2,835,067	56.2	352.2
Waste and noils of wool, mohair, camel hair, etc.	40,260,627	37,881,087	23,743,175	25,073,536	7,478,656	6,682,902	69.6	275.2
Tops purchased	533,758	590,716	558,938	738,326	303,283	412,590	−4.5	78.9
Yarns purchased:								
Woolen	2,172,487	801,270	338,131	3,359,995	272,450	170,193	542.5	1,874.2
Worsted	3,909,077	2,617,815	5,821,394	8,368,291	2,112,950	5,576,492	−32.8	50.1
Merino	797,952	479,837	1,876,073	561,712	145,250	264,867	−57.5	112.2
Cotton	12,854,825	15,316,551	16,888,501	8,850,883	3,601,304	3,855,752	−23.9	129.6
Silk and spun silk	84,212	111,580	70,959	605,681	274,857	227,319	18.7	166.4
All other	1,682,374	1,975,073	1,044,565	311,096	96,940	40,550	61.1	667.2
Chemicals and dyestuffs				11,392,624	3,517,991	3,370,501		238.0
All other materials				30,765,412	6,831,338	8,973,682		

[1] A minus sign (−) denotes decrease.

TABLE 4.—*Quantity and value of woven fabrics produced by the woolen-goods industry 1914–1925*

[Source: Bureau of the Census]

Class	1925	1923	1921	1919	1914
Total value of all products	$361,524,034	$364,287,817	$230,944,847	$364,896,590	$103,815,905
Woven goods: [1]					
Pounds	201,667,313	226,954,779	154,674,577	204,717,071	[2]
Square yards	304,683,747	316,092,088	224,388,113	253,621,026	228,562,987
Value	$308,124,413	$321,415,657	$207,370,346	$315,796,118	$89,683,731
Suitings, dress goods, overcoatings and cloakings—					
Pounds	158,935,216	180,192,782	125,314,566	150,649,923	[2]
Square yards	235,699,509	244,455,967	181,926,705	185,678,763	156,258,914
Value	$259,076,599	$271,723,797	$174,439,966	$260,837,468	$70,368,520
All-wool woolen—					
Pounds	102,152,217	120,470,426	89,381,046	106,089,121	[2]
Square yards	148,015,611	150,983,410	120,263,905	119,523,723	74,220,650
Value	$189,689,345	$199,177,804	$137,366,640	$194,602,522	$45,444,007
All-wool worsted—					
Pounds	3,348,715	4,493,333	1,492,918	2,964,328	[2]
Square yards	6,064,227	8,538,766	3,531,760	4,348,267	2,508,763
Value	$11,028,565	$13,482,338	$4,313,566	$9,172,426	$2,137,030

[1] Not including woven upholstery goods. [2] Not reported.

TABLE 4.—*Quantity and value of woven fabrics produced by the woolen-goods industry 1914–1925*—Continued

Class	1925	1923	1921	1919	1914
Woven goods—Continued.					
Suitings, dress goods, overcoatings and cloakings—Continued.					
Wool and cotton mixed—					
Pounds	12,945,700	16,834,315	10,462,381	17,643,021	(1)
Square yards	20,189,956	22,739,313	14,434,019	22,046,401	28,549,109
Value	$17,705,952	$22,922,455	$11,124,357	$23,507,042	$10,243,869
Cotton-warp woolen—					
Pounds	40,143,516	37,914,008	23,912,462	22,738,473	(1)
Square yards	60,892,042	61,136,209	43,585,942	37,100,656	48,284,320
Value	$39,963,304	$35,379,558	$21,586,603	$31,508,800	$11,878,272
Cotton-warp worsted—					
Pounds	345,068	480,700	65,759	1,214,980	(1)
Square yards	537,671	1,058,269	111,079	2,659,716	2,696,072
Value	$689,342	$761,642	$48,800	$2,046,678	$665,342
Flannels for underwear, all wool:					
Pounds	172,234	1,386,689	853,195	825,886	(1)
Square yards	672,067	2,842,795	1,846,965	1,733,250	2,176,264
Value	$299,385	$2,120,082	$1,319,579	$1,860,585	$880,494
Flannels for underwear, cotton mixed:					
Pounds	284,636	1,149,604	683,937	2,610,419	(1)
Square yards	998,736	3,777,337	2,624,981	6,497,990	4,995,575
Value	$649,002	$1,635,735	$1,191,384	$5,205,330	$1,089,661
Domett flannels and shirtings:					
Pounds	2,907,735	2,855,576	(2)	11,409,777	(1)
Square yards	7,205,582	6,154,684	(2)	21,183,496	16,092,266
Value	$3,439,996	$4,595,279	(2)	$10,596,709	$2,814,054
Satinets and linseys:					
Pounds	7,826,186	3,833,126	2,350,709	3,299,931	(1)
Square yards	11,877,015	6,107,064	4,523,398	4,637,678	8,415,079
Value	$4,244,228	$2,278,151	$1,524,882	$3,517,427	$1,535,291
Blankets, all wool:					
Pounds	(2)	(2)	(2)	4,955,831	(1)
Square yards	(2)	(2)	(2)	5,896,557	5,786,215
Value	(2)	(2)	(2)	$6,837,897	$3,843,893
Blankets, cotton mixed:					
Pounds	5,058,469	(2)	(2)	7,459,554	(1)
Square yards	8,097,783	(2)	(2)	9,922,925	3,937,463
Value	$5,174,672	(2)	(2)	$8,616,905	$2,067,934
Blankets, cotton warp:					
Pounds	(2)	(2)	6,054,942	7,603,761	(1)
Square yards	(2)	(2)	9,295,825	9,244,134	17,973,821
Value	(2)	(2)	$6,072,579	$7,289,253	$3,010,070
Horse blankets:					
Pounds	(2)	2,497,525	(2)	1,664,039	(1)
Square yards	(2)	2,475,356	(2)	1,695,715	8,164,672
Value	(2)	$1,338,551	(2)	$1,606,417	$2,017,782
Carriage robes:					
Pounds	(2)	(2)	(2)	1,754,951	(1)
Square yards	(2)	(2)	(2)	1,297,439	1,768,865
Value	(2)	(2)	(2)	$1,908,343	$1,233,555
Woven shawls:					
Pounds	182,326	(2)	(2)	590,667	(1)
Square yards	250,256	(2)	(2)	868,971	124,486
Value	$351,646	(2)	(2)	$854,041	$60,365
All other woolen and worsted woven goods:					
Pounds	6,418,011	10,844,131	5,647,419	11,894,332	(1)
Square yards	11,208,848	14,097,118	6,969,385	4,964,108	2,869,367
Value	$12,255,967	$14,328,542	$9,639,577	$6,665,741	$756,112

[1] Not reported.

[2] Included in "all other woolen and worsted woven goods."

TABLE 5.—*Summary of the worsted-goods industry of the United States, 1889–1925*

[Source: Bureau of the Census]

	1925	1923	1921	1919	1914
Number of establishments	329	338	321	292	298
Persons engaged	103, 664	128, 342	111, 643	109, 372	113, 059
Proprietors and firm members	95	93	135	129	141
Salaried employees	5, 401	6, 105	5, 578	5, 314	3, 391
Wage earners (average number)	98, 168	122, 144	105, 930	103, 930	109, 527
Primary horsepower	377, 215	357, 806	(2)	295, 833	246, 623
Capital	(2)	(2)	(2)	$557, 721, 078	$281, 780, 836
Salaries and wages	$125, 497, 213	$154, 431, 519	$128, 302, 338	119, 353, 515	58, 772, 968
Salaries	16, 662, 459	18, 760, 705	16, 300, 720	17, 840, 660	7, 024, 003
Wages	108, 834, 754	135, 670, 814	112, 001, 618	101, 512, 855	51, 748, 965
Paid for contract work	5, 614, 919	6, 905, 168	6, 762, 371	8, 013, 960	1, 714, 838
Rent and taxes	(2)	(2)	(2)	37, 218, 556	2, 306, 957
Cost of materials	400, 783, 613	421, 184, 417	279, 769, 742	447, 629, 350	182, 800, 624
Value of products	596, 266, 304	698, 270, 621	524, 638, 921	700, 537, 482	275, 668, 474
Value added by manufacture [3]	195, 482, 691	277, 086, 204	244, 869, 179	252, 908, 132	92, 867, 850

	1909	1904	1899	1889
Number of establishments	324	226	186	143
Persons engaged	114, 422	71, 098	58, 377	43, 593
Proprietors and firm members	197			
Salaried employees	3, 213	[1] 1, 847	[1] 1, 369	[1] 615
Wage earners (average number)	111, 012	69, 251	57, 008	42, 978
Primary horsepower	315, 453			
Capital	$295, 057, 923	$162, 464, 929	$132, 168, 110	$68, 085, 116
Salaries and wages	53, 186, 618	29, 174, 747	22, 434, 956	15, 880, 183
Salaries	6, 034, 747	2, 904, 960	2, 342, 218	935, 217
Wages	47, 151, 871	26, 269, 787	20, 092, 738	14, 944, 966
Cost of materials	207, 786, 936	109, 658, 481	77, 075, 222	50, 706, 769
Value of products	312, 624, 663	165, 745, 052	120, 314, 344	79, 194, 652
Value added by manufacture [3]	104, 837, 727	56, 086, 571	43, 239, 122	28, 487, 882

[1] Includes proprietors and firm members.
[2] Figures not available.
[3] Value of products less cost of materials.

TABLE 6.—*Wool used in the worsted-goods industry, 1879–1919*

[Source: Bureau of the Census]

Census year	Quantity, in condition purchased			Per cent of total	
	Total	Domestic	Foreign	Domestic	Foreign
	Pounds	*Pounds*	*Pounds*		
1919	337, 669, 614	181, 971, 185	155, 698, 429	53. 9	46. 1
1914	355, 854, 756	204, 397, 868	151, 456, 888	57. 4	42. 6
1909	387, 717, 415	237, 088, 015	150, 629, 400	61. 1	38. 9
1904	261, 368, 084	187, 143, 988	74, 224, 096	71. 6	28. 4
1899	179, 977, 936	122, 714, 543	57, 263, 393	68. 2	31. 8
1889	97, 701, 474	59, 832, 451	37, 869, 023	61. 2	38. 8
1879	41, 149, 326	25, 461, 511	15, 687, 815	61. 9	38. 1

TABLE 7.—*Quantity and value of materials used in the domestic worsted-goods industry, 1909–1919*

[Source: Bureau of Census]

	Quantity			Value			Per cent of increase, 1909–1919 [1]	
	1919	1914	1909	1919	1914	1909		
	Pounds	*Pounds*	*Pounds*				*Quantity*	*Value*
Total value				$447,629,350	$182,800,624	$207,786,936		
Wool:								
In condition purchased	337,669,614	355,854,756	387,717,415	210,634,671	84,611,428	109,237,887	−12.9	92.8
Domestic	181,971,185	204,397,868	237,088,015	110,942,335	45,259,192	61,238,802	−23.2	81.2
Foreign	155,698,429	151,456,888	150,629,400	99,692,336	39,352,236	47,999,085	3.4	107.7
Equivalent in scoured condition	177,288,745	198,755,341	230,580,497				−23.1	
Mohair, and camel, alpaca and vicuna hair	12,474,340	12,089,108	6,515,367	8,026,236	3,841,625	2,052,489	91.5	291.0
Other animal hair	3,192,817	832,799	926,292	1,401,184	69,256	84,733	241.0	1,553.6
Cotton	2,745,483	4,471,526	4,222,667	1,170,234	709,843	588,990	−35.0	98.7
Rags, clippings, etc	699,710	679,555	2,014,906	193,979	36,461	165,508	−65.3	17.2
Recovered wool fiber	1,747,551	316,617	1,335,882	697,511	50,511	223,147	30.8	212.6
Waste and noils of wool mohair, camel hair, etc	3,477,614	4,530,787	2,730,136	2,945,193	1,427,829	840,381	27.4	250.5
Tops purchased	25,732,481	28,515,591	20,269,307	44,710,904	16,376,536	14,201,937	27.0	214.8
Yarns purchased:								
Woolen	6,189,297	1,367,101	593,091	9,527,483	902,365	388,077	943.6	2,355.0
Worsted	39,053,028	51,008,982	53,327,377	102,068,641	42,547,762	50,457,209	−26.8	102.3
Merino	806,601	51,026	95,636	1,623,574	23,269	53,589	743.4	2,929.7
Cotton	15,828,820	16,788,861	22,280,887	12,226,553	5,475,629	6,636,433	−29.0	84.2
Silk and spun silk	331,572	404,370	211,577	2,677,705	1,736,028	915,344	56.7	192.5
All other	274,235	3,120	2,170	500,032	6,394	189	12,537.6	264,467.2
Chemicals and dyestuffs				11,477,878	5,018,241	5,450,427		110.6
All other materials				37,727,572	23,194,934	16,490,596		

[1] A minus sign (−) denotes decrease.

TABLE 8.—*Quantity and value of woven fabrics produced by the worsted-goods industry, 1914–1925*

[Source: Bureau of the Census]

Class	1925	1923	1921	1919	1914
Total value of all products	$596,266,304	$698,270,621	$524,638,921	$700,537,482	$275,668,474
Woven goods:[1]					
Pounds	132,637,394	152,253,135	116,576,197	124,927,726	(2)
Square yards	275,105,188	311,925,421	269,371,442	282,316,546	336,899,172
Value	$365,444,610	$423,852,012	$343,310,335	$423,483,677	$178,995,749
Suitings, dress goods, overcoatings, and cloakings—					
Pounds	103,591,946	134,213,998	109,333,071	117,050,496	(2)
Square yards	225,222,931	267,683,471	241,722,039	251,897,103	298,784,887
Value	$307,225,494	$385,509,682	$326,740,042	$402,037,495	$167,941,734
All-wool woolen—					
Pounds	2,910,273	12,496,150	7,298,737	11,059,949	(2)
Square yards	5,307,090	21,044,141	12,022,114	19,886,629	16,729,731
Value	$9,274,592	$32,032,887	$19,184,618	$48,469,519	$10,216,496
All-wool worsted—					
Pounds	79,454,676	103,164,964	85,625,006	83,017,535	(2)
Square yards	173,098,647	202,449,336	181,826,985	172,158,185	219,912,022
Value	$264,588,534	$320,477,040	$275,599,139	$304,507,208	$139,641,005
Wool and cotton mixed—					
Pounds	4,070,894	1,158,988	1,922,244	1,854,261	(2)
Square yards	5,934,450	1,993,002	4,055,588	2,568,972	2,850,973
Value	$8,236,551	$3,338,785	$3,146,179	$2,538,345	$1,466,741
Cotton-warp woolen—					
Pounds	15,654	907,022	423,098	1,033,170	(2)
Square yards	41,569	2,066,853	777,356	2,046,246	5,225,142
Value	$65,883	$1,622,112	$1,078,112	$3,226,520	$1,719,735
Cotton-warp worsted—					
Pounds	17,240,449	16,486,874	14,063,986	20,085,581	(2)
Square yards	40,841,175	40,130,139	43,039,996	55,237,071	54,067,019
Value	$25,059,934	$28,038,858	$27,731,894	$43,295,903	$14,897,757
Flannels for underwear, all wool:					
Pounds	----------	----------	----------	(3)	----------
Square yards	----------	----------	----------	(3)	----------
Value	----------	----------	----------	(3)	----------
Flannels for underwear, cotton mixed:					
Pounds	----------	----------	----------	(3)	----------
Square yards	----------	----------	----------	(3)	----------
Value	----------	----------	----------	(3)	----------
Domett flannels and shirtings:					
Pounds	----------	----------	(3)	370,754	(3)
Square yards	----------	----------	(3)	1,040,384	(3)
Value	----------	----------	(3)	$1,003,668	(3)
Satinets and linseys:					
Pounds	----------	----------	----------	(3)	(3)
Square yards	----------	----------	----------	(3)	(3)
Value	----------	----------	----------	(3)	(3)
Blankets, all wool:					
Pounds	----------	----------	(3)	21,607	(3)
Square yards	----------	----------	(3)	19,640	703,474
Value	----------	----------	(3)	$60,026	$342,861
Blankets, cotton mixed:					
Pounds	----------	----------	(3)	(3)	----------
Square yards	----------	----------	(3)	(3)	----------
Value	----------	----------	(3)	(3)	----------
Blankets, cotton warped:					
Pounds	----------	----------	----------	(3)	(3)
Square yards	----------	----------	----------	(3)	(3)
Value	----------	----------	----------	(3)	(3)
All other woolen and worsted goods:					
Pounds	12,131,741	11,126,031	6,921,673	7,484,869	(3)
Square yards	32,835,199	37,973,429	27,468,346	29,359,419	37,410,811
Value	$26,528,789	$21,506,570	$16,242,055	$20,382,488	$10,711,154

[1] Not including woven upholstery goods.
[2] Not reported.
[3] Included in all other woolen and worsted woven goods.

TABLE 9.—*Average hours and earnings and classified full-time hours per week of employees in woolen and worsted mills, by occupation and sex, 1910–1926*

[Source: U. S. Department of Labor]

Occupation and sex	Year	Number of establishments	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Per cent of employees whose full-time hours per week were—						
							Under 48 hours	48 hours	Over 48 and under 54 hours	54 hours	Over 54 and under 57 hours	57 and under 60 hours	60 hours
Wool sorters:													
Male	1910	18	289	56.3	$0.247	$13.86	----	------	----	----	88	4	8
	1911	19	444	56.4	.241	13.54	----	------	----	----	83	12	5
	1912	19	471	55.2	.267	14.72	----	------	----	61	21	14	3
	1913	19	246	55.0	.281	15.43	----	------	----	65	21	14	----
	1914	15	381	54.2	.276	14.97	----	------	----	83	17	(1)	----
	1916	17	412	54.1	.329	17.80	1	------	----	82	17	----	----
	1918	20	538	54.4	.460	24.94	----	------	----	87	7	----	5
	1920	22	423	48.1	.871	41.90	----	[2] 99	----	1	----	----	----
	1922	17	358	48.4	.710	34.36	----	94	----	6	----	----	----
	1924	19	359	49.5	.776	38.41	----	75	1	24	----	----	----
	1926	30	445	50.8	.713	36.22	----	------	----	----	----	----	----
Female	1920	1	28	48.0	.901	43.25	----	[2] 100	----	----	----	----	----
	1922	3	37	48.0	.702	33.70	----	100	----	----	----	----	----
	1924	5	65	48.2	.608	29.31	----	97	----	3	----	----	----
	1926	2	37	48.0	.698	33.50	----	------	----	----	----	----	----
Woolwasher tenders: Male	1920	20	113	48.8	.583	28.45	----	[2] 88	----	11	----	----	2
	1922	23	93	49.2	.446	21.94	----	84	1	9	1	5	----
	1924	20	119	49.3	.513	25.29	----	78	1	19	----	2	----
	1926	33	122	50.2	.463	23.24	----	------	----	----	----	----	----
Picker tenders: Male	1920	41	277	48.3	.530	25.60	----	[2] 95	----	5	----	----	----
	1922	43	276	49.3	.428	21.10	----	82	5	9	----	----	5
	1924	45	275	49.3	.471	23.22	----	79	3	15	----	----	3
	1926	56	245	49.7	.438	21.77	----	------	----	----	----	----	----
Card tenders:													
Male	1910	26	201	56.9	.127	7.25	----	------	----	----	66	20	14
	1911	40	320	57.1	.136	7.73	----	------	----	----	55	35	10
	1912	40	412	56.4	.135	7.64	----	------	----	36	18	33	13
	1913	40	329	56.3	.142	8.01	----	------	----	32	24	36	8
	1914	41	398	56.1	.147	8.26	----	------	----	46	18	19	18
	1916	47	533	55.8	.186	10.38	----	------	----	47	22	15	17
	1918	47	509	54.8	.287	15.75	3	[2] 4	----	62	16	1	14
	1920	43	444	48.4	.517	25.02	(1)	[2] 94	----	3	----	----	2
	1922	46	514	49.5	.405	20.05	----	81	4	9	----	2	4
	1924	47	528	49.4	.473	23.37	----	81	5	9	1	----	4
	1926	70	531	49.8	.419	20.87	----	------	----	----	----	----	----
Female	1920	11	103	48.3	.437	21.11	----	[2] 95	----	5	----	----	----
	1922	10	109	48.2	.351	16.92	----	97	3	----	----	----	----
	1924	12	94	48.0	.409	19.63	----	100	----	----	----	----	----
	1926	19	166	48.7	.365	17.78	----	------	----	----	----	----	----
Card strippers: Male	1910	27	162	57.0	.153	8.69	----	------	----	----	64	20	16
	1911	42	223	57.1	.151	8.62	----	------	----	----	52	37	11
	1912	42	240	56.9	.163	9.29	----	------	----	29	15	39	17
	1913	42	236	56.5	.168	9.46	----	------	----	27	23	45	5
	1914	43	250	55.7	.169	9.44	----	------	----	48	20	20	12
	1916	48	303	55.5	.209	11.61	(1)	------	----	52	19	18	10
	1918	48	359	54.8	.324	17.77	----	------	----	76	15	2	7
	1920	45	292	48.2	.570	27.47	----	[2] 96	----	4	----	----	----
	1922	46	311	49.5	.433	21.43	----	84	4	8	----	1	4
	1924	49	368	50.6	.506	25.60	----	74	3	9	3	----	10
	1926	73	381	49.5	.464	22.97	----	------	----	----	----	----	----
Card grinders: Male	1922	12	28	48.4	.491	23.76	----	89	7	4	----	----	----
	1924	15	37	48.8	.602	29.38	----	84	5	11	----	----	----
	1926	18	36	50.9	.537	26.64	----	------	----	----	----	----	----
Gill box tenders:													
Male	1920	8	130	49.8	.502	25.00	----	[2] 85	----	2	----	----	14
	1922	8	288	48.3	.363	17.53	----	96	----	4	----	----	----
	1924	8	343	49.9	.439	21.91	(1)	73	2	11	9	----	5
	1926	13	209	50.1	.405	20.29	----	------	----	----	----	----	----
Female	1920	15	383	48.4	.442	21.39	----	[2] 93	----	7	----	----	----
	1922	15	413	49.1	.339	16.64	----	81	----	19	----	----	----
	1924	14	435	49.4	.382	18.87	(1)	75	1	21	3	----	----
	1926	21	296	51.0	.326	16.63	----	------	----	----	----	----	----

[1] Less than 1 per cent.

[2] Tabulated in previous reports as "48 and under 54."

TABLE 9.—*Average hours and earnings and classified full-time hours per week of employees in woolen and worsted mills, by occupation and sex, 1910–1926*—Continued

Occupation and sex	Year	Number of establishments	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Per cent of employees whose full-time hours per week were—						
							Under 48 hours	48 hours	Over 48 and under 54 hours	54 hours	Over 54 and under 57 hours	57 and under 60 hours	60 hours
Comber tenders:													
Male	1910	6	106	56.5	.139	7.87	----	----	----	----	88	----	12
	1911	9	188	56.5	.141	7.94	----	----	----	----	82	10	9
	1912	9	181	55.1	.156	8.56	----	----	----	72	8	12	8
	1913	9	115	54.8	.156	8.51	----	----	----	77	6	17	----
	1914	6	228	55.8	.161	9.00	----	----	----	64	7	----	28
	1916	8	274	56.3	.199	11.18	----	----	----	59	1	2	38
	1918	9	248	55.8	.314	17.49	----	----	----	69	1	----	29
	1920	10	162	48.9	.552	26.99	----	[2] 93	----	----	----	----	7
	1922	11	209	48.1	.435	20.92	----	98	----	2	----	----	----
	1924	7	212	49.6	.522	25.89	----	79	----	11	4	----	5
	1926	10	171	50.5	.478	24.14	----	----	----	----	----	----	----
Female	1910	6	129	55.5	.111	6.13	----	----	----	----	97	----	3
	1911	7	139	55.8	.109	6.10	----	----	----	----	82	15	3
	1912	7	150	55.8	.116	6.47	----	----	----	----	82	13	5
	1913	7	163	56.1	.117	6.57	----	----	----	1	75	15	8
	1914	6	162	54.8	.119	6.52	----	----	----	25	75	----	----
	1916	10	178	53.5	.177	9.46	----	[2] 19	----	48	33	----	----
	1918	12	328	52.8	.258	13.59	2	[2] 18	----	55	25	----	----
	1920	12	155	48.7	.478	23.28	----	[2] 89	----	11	----	----	----
	1922	10	100	49.7	.385	19.13	----	71	----	29	----	----	----
	1924	10	114	49.2	.418	20.57	----	77	4	18	----	----	----
	1926	17	163	49.9	.378	18.86	----	----	----	----	----	----	----
Drawing-frame tenders:													
Male	1916	5	211	55.0	.178	9.80	[1]	----	----	77	4	8	11
	1918	6	193	54.1	.264	14.81	----	----	----	96	4	----	----
	1920	6	51	48.0	.501	24.05	----	[2] 100	----	----	----	----	----
	1922	8	189	48.1	.378	18.18	1	98	----	2	----	----	----
	1924	8	263	49.2	.439	21.60	[1]	81	----	2	16	----	----
	1926	9	271	48.8	.380	18.54	----	----	----	----	----	----	----
Female	1916	14	1,603	53.7	.170	9.15	1	[2] 13	----	62	23	2	----
	1918	15	1,760	52.9	.250	13.24	3	[2] 11	----	66	21	----	----
	1920	16	1,758	48.3	.445	21.49	[1]	[2] 96	----	4	----	----	----
	1922	17	1,615	48.5	.349	16.93	----	91	----	9	----	----	----
	1924	15	1,885	48.9	.397	19.41	[1]	83	2	12	3	----	----
	1926	26	1,753	49.7	.352	17.49	----	----	----	----	----	----	----
Spinners, mule: Male	1910	26	529	57.0	.224	12.75	----	----	----	----	61	26	13
	1911	40	638	57.3	.224	12.81	----	----	----	----	49	38	13
	1912	40	719	56.5	.240	13.56	----	----	----	35	15	38	11
	1913	42	828	56.5	.239	13.45	----	----	----	30	21	41	8
	1914	42	897	56.0	.249	13.88	----	----	----	45	17	19	17
	1916	46	1,222	55.3	.316	17.51	----	[2] 2	----	55	17	18	8
	1918	46	1,431	54.9	.499	27.42	----	[2] 5	----	58	24	1	12
	1920	46	960	48.2	.816	39.33	----	[2] 96	----	4	----	----	----
	1922	44	1,119	49.2	.670	32.96	----	82	4	11	----	3	1
	1924	47	1,290	48.9	.755	36.92	----	83	6	9	1	1	----
	1926	69	1,249	49.7	.695	34.54	----	----	----	----	----	----	----
Spinners, frame:													
Male	1910	2	114	56.0	.125	7.01	----	----	----	----	100	----	----
	1911	3	194	56.0	.132	7.37	----	----	----	----	100	----	----
	1912	3	244	54.0	.158	8.53	----	----	----	100	----	----	----
	1913	3	115	54.0	.136	7.33	----	----	----	100	----	----	----
	1914	3	282	53.9	.143	7.80	1	----	----	99	----	----	----
	1916	3	266	53.9	.191	10.30	1	----	----	99	----	----	----
	1918	5	161	53.0	.316	16.74	11	----	----	89	----	----	----
	1920	4	49	48.0	.558	26.78	----	[2] 100	----	----	----	----	----
	1922	4	45	48.0	.357	17.14	----	100	----	----	----	----	----
	1924	3	46	50.0	.421	21.05	----	67	----	33	----	----	----
	1926	1	24	48.0	.371	17.81	----	----	----	----	----	----	----
Female	1910	8	578	56.0	.122	6.85	----	----	----	----	97	----	3
	1911	10	1,002	56.4	.126	7.07	----	----	----	----	80	19	1
	1912	10	1,070	55.2	.144	7.92	----	----	----	53	32	14	1
	1913	10	751	55.5	.140	7.78	----	----	----	43	34	23	----
	1914	9	970	54.2	.147	7.99	----	----	----	75	25	----	----
	1916	14	1,202	53.9	.180	9.68	1	[2] 7	----	70	20	2	----
	1918	15	1,330	52.4	.278	14.62	6	[2] 4	----	80	9	----	----
	1920	14	1,026	48.2	.481	23.18	[1]	[2] 96	----	3	----	----	----
	1922	15	972	48.4	.345	16.70	2	90	----	8	----	----	----
	1924	14	1,106	48.9	.417	20.39	[1]	82	4	14	----	----	----
	1926	23	1,228	49.8	.362	18.03	----	----	----	----	----	----	----

[1] Less than 1 per cent.

[2] Tabulated in previous reports as "48 and under 54."

TABLE 9.—*Average hours and earnings, and classified full-time hours per week of employees in woolen and worsted mills, by occupation and sex, 1910–1926*—Continued

Occupation and sex	Year	Number of establishments	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Per cent of employees whose full-time hours per week were—						
							Under 48 hours	48 hours	Over 48 and under 54 hours	54 hours	Over 54 and under 57 hours	57 and under 60 hours	60 hours
Doffers:													
Male	1916	5	255	49.8	$0.161	$8.05	51	----	----	49	----	----	----
	1918	5	138	50.5	.266	13.58	40	----	----	60	----	----	----
	1920	6	108	46.3	.497	23.01	27	[2] 73	----	----	----	----	----
	1922	5	165	47.0	.299	14.05	30	70	----	----	----	----	----
	1924	7	214	49.9	.301	15.02	26	27	----	47	----	----	----
	1926	6	52	48.8	.280	13.66	----	----	----	----	----	----	----
Female	1916	12	709	52.2	.135	7.05	22	[2] 4	----	42	30	2	----
	1918	12	829	48.6	.203	9.85	37	[2] 2	----	53	8	----	----
	1920	14	561	46.7	.352	16.44	30	[2] 67	----	3	----	----	----
	1922	14	619	48.1	.275	13.23	19	68	----	13	----	----	----
	1924	10	566	48.1	.315	15.15	20	62	7	11	----	----	----
	1926	22	701	49.9	.280	13.97	----	----	----	----	----	----	----
Twister tenders: Female	1910	10	332	56.9	.126	7.16	----	----	----	----	68	9	23
	1911	12	600	56.7	.131	7.40	----	----	----	----	76	10	14
	1912	12	751	55.7	.137	7.62	----	----	----	51	28	5	16
	1913	12	598	55.4	.135	7.50	----	----	----	45	38	8	9
	1914	11	884	54.3	.144	7.81	----	----	----	74	26	----	----
	1916	23	1,028	54.2	.174	9.43	[1]	[2] 1	----	83	11	4	----
	1918	24	802	53.9	.256	13.80	2	[2] 1	----	88	8	----	----
	1920	34	1,043	48.3	.457	22.07	2	[2] 88	----	10	----	1	----
	1922	40	892	49.3	.352	17.35	[1]	78	----	22	----	----	----
	1924	38	914	49.3	.418	20.61	[1]	73	5	21	----	----	----
	1926	65	1,117	49.7	.364	18.09	----	----	----	----	----	----	----
Spooler tenders: Female	1916	55	1,571	54.1	.173	9.40	4	[2] 1	----	76	8	11	----
	1918	56	1,514	53.6	.270	14.51	7	----	----	75	18	----	----
	1920	55	1,474	48.2	.458	22.08	1	[2] 95	----	4	----	[1]	----
	1922	59	1,247	48.7	.383	18.65	[1]	87	2	11	----	----	----
	1924	64	1,228	48.6	.419	20.36	[1]	89	2	9	----	----	----
	1926	95	1,283	49.1	.391	19.20	----	----	----	----	----	----	----
Dresser tenders: Male	1910	27	214	57.1	.242	13.80	----	----	----	----	6	18	21
	1911	46	337	57.1	.243	13.85	----	----	----	----	58	28	14
	1912	46	384	56.4	.262	14.71	----	----	----	28	35	26	11
	1913	46	347	56.3	.263	14.80	----	----	----	26	37	30	7
	1914	47	363	55.2	.273	15.03	----	----	----	63	17	11	9
	1916	55	422	55.0	.318	17.47	----	----	----	63	19	12	5
	1918	58	469	54.6	.452	24.28	----	----	----	72	22	----	6
	1920	63	403	48.6	.767	37.28	[1]	[2] 91	----	7	----	2	----
	1922	58	493	48.8	.653	31.87	1	87	[1]	10	----	----	2
	1924	65	467	49.3	.748	36.88	----	81	4	13	----	[1]	2
	1926	95	545	49.1	.705	34.62	----	----	----	----	----	----	----
Creelers or tiers-in: Female	1922	3	40	47.9	.315	15.09	3	98	----	----	----	----	----
	1924	3	21	52.9	.311	16.45	----	19	----	81	----	----	----
Drawers-in:													
Male	1924	10	40	51.6	.690	35.60	----	18	35	48	----	----	----
	1926	22	59	50.2	.666	33.43	----	----	----	----	----	----	----
Female	1916	52	424	54.7	.250	13.68	----	----	----	63	25	12	----
	1918	55	406	54.2	.355	19.23	1	----	----	78	21	----	----
	1920	63	392	48.3	.595	28 74	1	[2] 94	----	4	----	1	----
	1922	60	436	48 5	.480	23.28	1	90	1	8	----	----	----
	1924	62	453	49.1	.535	26.27	----	81	1	17	----	----	----
	1926	84	533	48.9	.497	24.30	----	----	----	----	----	----	----
Loom fixers: Male	1910	27	429	56.6	.279	15.76	----	----	----	----	79	9	12
	1911	46	569	56.7	.275	15.59	----	----	----	----	68	24	8
	1912	46	589	55.9	.308	17.13	----	----	----	38	32	21	9
	1913	47	581	55.8	.297	16.55	----	----	----	39	31	26	4
	1914	47	651	55.1	.312	17.18	----	----	----	58	27	7	7
	1916	60	794	54.9	.381	20.70	----	[2] 1	----	60	24	10	4
	1918	61	843	54.5	.552	30.04	----	[2] 1	----	74	20	----	5
	1920	64	738	48.3	.973	47.00	[1]	[2] 95	----	4	----	1	----
	1922	64	747	48.4	.754	36.49	1	92	1	6	----	----	----
	1924	68	821	49.0	.870	42.63	----	83	3	13	----	1	[1]
	1926	99	748	49.0	.807	39.54	----	----	----	----	----	----	----

[1] Less than 1 per cent.

[2] Tabulated in previous reports as "48 and under 54."

TABLE 9.—*Average hours and earnings and classified full-time hours per week of employees in woolen and worsted mills, by occupation and sex, 1910–1926*—Continued

Occupation and sex	Year	Number of establishments	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Per cent of employees whose full-time hours per week were—						
							Under 48 hours	48 hours	Over 48 and under 54 hours	54 hours	Over 54 and under 57 hours	57 and under 60 hours	60 hours
Weavers:													
Male	1910	27	2,907	57.1	$0.207	$11.79	----	------	----	----	65	17	19
	1911	46	4,049	57.1	.210	11.97	----	------	----	----	60	25	14
	1912	46	4,476	56.3	.237	13.30	----	------	----	33	28	24	15
	1913	47	3,834	56.3	.232	13.06	----	------	----	28	32	34	6
	1914	48	4,336	55.2	.238	13.10	----	------	----	60	19	11	9
	1916	61	5,431	54.9	.304	15.95	----	[2]	----	64	17	14	4
	1918	61	5,812	54.5	.470	25.52	----	[2]	----	73	21	----	4
	1920	64	4,825	48.3	.807	38.98	1	[2] 94	----	4	----	1	----
	1922	64	5,518	48.3	.616	29.75	2	89	1	8	----	----	----
	1924	68	5,725	48.8	.701	34.21	----	87	4	9	----	----	1
	1926	97	5,528	48.9	.652	31.88	----	------	----	----	----	----	----
Female	1910	27	2,855	56.3	.180	10.14	----	------	----	----	84	7	9
	1911	46	3,394	56.8	.184	10.47	----	------	----	----	63	28	9
	1912	46	3,586	55.9	.206	11.48	----	------	----	39	28	25	8
	1913	47	3,493	56.0	.197	11.03	----	------	----	30	32	36	2
	1914	48	3,862	54.7	.203	11.08	----	------	----	54	39	8	----
	1916	61	4,505	54.5	.271	14.76	----	[2] 4	----	56	32	8	----
	1918	61	5,295	54.1	.406	21.96	[1]	[2] 4	----	75	21	----	----
	1920	63	3,783	48.3	.747	36.08	[1]	[2] 95	----	4	----	1	----
	1922	63	3,622	48.4	.576	27.85	[1]	92	2	6	----	----	----
	1924	67	3,713	48.9	.654	31.98	----	84	4	12	----	----	----
	1926	89	2,748	49.2	.600	29.52	----	------	----	----	----	----	----
Cloth inspectors:													
Male	1920	10	251	48.0	.763	36.62	----	[2] 100	----	[1]	----	----	----
	1922	49	315	48.3	.560	27.05	1	94	2	3	----	----	----
	1924	19	246	48.7	.582	28.34	----	86	2	11	----	----	----
	1926	23	235	48.3	.563	27.19	----	------	----	----	----	----	----
Female	1920	16	144	48.3	.504	24.34	----	[2] 96	----	4	----	----	----
	1922	7	54	48.4	.373	18.05	----	93	----	7	----	----	----
	1924	18	245	48.6	.484	23.52	----	87	5	8	----	----	----
	1926	21	103	49.6	.421	20.88	----	------	----	----	----	----	----
Burlers: Female	1910	26	1,034	56.5	.130	7.33	----	------	----	----	81	9	10
	1911	43	1,516	56.8	.130	7.36	----	------	----	----	65	27	9
	1912	44	1,562	55.9	.145	8.25	----	------	----	46	17	30	7
	1913	44	1,643	55.6	.146	8.14	----	------	----	52	20	26	2
	1914	44	1,756	54.6	.155	8.47	1	------	----	54	40	4	----
	1916	55	1,889	54.6	.185	10.09	[1]	[2] 1	----	65	26	9	----
	1918	55	1,867	54.1	.276	14.94	[1]	[2] 2	----	80	17	----	----
	1920	64	2,321	48.4	.452	21.88	1	93	----	5	----	1	----
	1922	61	1,773	48.2	.371	17.88	1	94	[1]	4	----	----	----
	1924	60	1,711	49.2	.420	20.66	[1]	7 78	2	19	----	----	----
	1926	90	1,722	49.3	.381	18.78	----	------	----	----	----	----	----
Menders: Female	1910	25	1,196	56.8	.160	9.09	----	------	----	----	73	10	18
	1911	44	1,623	56.8	.160	9.07	----	------	----	----	72	14	15
	1912	44	1,668	55.7	.189	10.50	----	------	----	53	20	14	12
	1913	42	1,388	55.3	.183	10.11	----	------	----	57	23	16	4
	1914	43	1,501	54.4	.195	10.57	1	------	----	82	8	9	----
	1916	53	1,767	54.3	.245	13.28	1	------	----	86	5	8	----
	1918	53	1,685	54.1	.349	18.91	----	------	----	91	9	----	----
	1920	61	1,729	48.5	.603	29.95	1	92	----	6	----	1	----
	1922	63	1,985	48.4	.445	21.54	3	89	1	7	----	----	----
	1924	64	1,850	48.5	.534	25.90	----	90	3	8	----	----	----
	1926	91	2,121	48.6	.507	24.64	----	------	----	----	----	----	----
Perchers:													
Male	1920	59	419	48.4	.687	33.25	[1]	[2] 94	----	4	----	2	----
	1922	55	352	48.6	.520	25.27	[1]	92	[1]	2	----	5	----
	1924	61	466	49.1	.601	29.51	----	82	1	16	----	----	[1]
	1926	91	462	49.1	.559	27.45	----	------	----	----	----	----	----
Female	1920	13	43	49.8	.468	23.31	----	[2] 70	----	30	----	----	----
	1922	15	75	48.4	.432	20.91	----	93	----	7	----	----	----
	1924	10	35	48.4	.452	21.88	----	91	6	3	----	----	----
	1926	16	97	48.6	.482	23.43	----	------	----	----	----	----	----
Fullers: Male	1920	53	195	48.6	.590	28.67	----	[2] 92	----	8	----	1	----
	1922	52	248	49.1	.468	22.98	----	85	4	7	----	----	4
	1924	51	227	49.0	.512	25.09	----	88	4	5	----	----	3
	1926	75	223	49.4	.464	22.92	----	------	----	----	----	----	----

[1] Less than 1 per cent.

[2] Tabulated in previous reports as "48 and under 54."

TABLE 9.—*Average hours and earnings and classified full-time hours per week of employees in woolen and worsted mills, by occupation and sex, 1910–1926*—Continued

Occupation and sex	Year	Number of establishments	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week	Per cent of employees whose full-time hours per week were—						
							Under 48 hours	48 hours	Over 48 and under 54 hours	54 hours	Over 54 and under 57 hours	57 and under 60 hours	60 hours
Washer tenders, cloth: Male	1920	56	378	48.6	$0.574	$27.90	----	[2] 93	----	4	----	1	2
	1922	59	330	49.6	.461	22.87	1	81	4	7	----	----	7
	1924	60	402	49.7	.518	25.74	----	81	4	8	----	----	6
	1926	85	353	49.7	.442	21.97	----	----	----	----	----	----	----
Dryer tenders, cloth: Male	1920	56	276	48.4	.551	26.67	----	[2] 96	----	3	----	(1)	1
	1922	57	219	50.3	.453	22.79	----	79	3	8	----	(1)	10
	1924	59	267	49.8	.506	25.20	----	81	2	12	----	----	5
	1926	84	222	49.9	.444	22.15	----	----	----	----	----	----	----
Truckers: Male	1920	62	1,205	48.1	.505	24.29	2	[2] 95	----	2	----	(1)	(1)
	1922	60	1,334	48.2	.299	19.23	1	95	1	2	----	(1)	(1)
	1924	64	1,672	49.2	.451	22.19	2	81	1	11	(1)	1	3
	1926	93	1,236	48.9	.408	19.95	----	----	----	----	----	----	----
Laborers, dyehouse: Male	1910	27	837	56.3	.143	8.06	----	----	----	----	85	9	7
	1911	45	1,116	56.6	.145	8.22	----	----	----	----	74	17	9
	1912	45	1,093	55.5	.157	8.72	----	----	----	51	25	17	7
	1913	46	1,041	55.6	.159	8.84	----	----	----	45	29	24	3
	1914	47	1,427	54.9	.160	8.75	----	----	----	69	18	7	7
	1916	55	1,636	55.0	.197	10.83	----	----	----	60	25	10	5
	1918	55	1,606	54.7	.304	16.60	(1)	[2] 2	----	67	25	----	7
	1920	52	961	48.3	.564	27.24	----	[2] 95	----	4	----	1	----
	1922	54	1,032	48.9	.435	21.32	----	87	3	5	----	3	1
	1924	59	877	49.2	.490	24.11	----	82	5	11	----	----	3
	1926	82	1,008	49.4	.445	21.98	----	----	----	----	----	----	----
Other employees:													
Male	1914	47	13,947	55.7	.180	10.03	2	[2] 1	----	59	18	7	14
	1916	63	16,978	55.8	.225	12.51	2	[2] 1	----	49	26	8	14
	1918	63	17,308	55.3	.330	18.24	4	[2] 3	----	57	23	1	13
	1920	67	7,194	48.6	.580	28.19	3	[2] 91	----	2	1	(1)	2
	1922	67	7,797	49.6	.455	22.57	2	82	1	6	2	2	6
	1924	72	7,964	49.3	.509	25.09	2	78	2	14	1	(1)	3
	1926	112	7,797	49.4	.481	23.76	----	----	----	----	----	----	----
Female	1914	46	7,781	54.2	.139	7.54	4	----	----	69	24	4	----
	1916	61	6,347	53.9	.168	9.05	4	[2] 5	----	54	34	4	(1)
	1918	63	6,407	53.4	.250	13.37	7	[2] 4	----	63	26	----	----
	1920	67	3,349	48.2	.421	20.29	6	[2] 87	----	6	----	1	----
	1922	61	3,461	48.9	.336	16.43	3	83	1	11	----	2	----
	1924	68	3,939	49.1	.382	18.76	3	75	2	20	(1)	----	----
	1926	105	3,750	49.4	.346	17.09	----	----	----	----	----	----	----

[1] Less than 1 per cent.

[2] Tabulated in previous reports as "48 and under 54."

TABLE 10.—*Wage changes in the wool-manufacturing industry, 1915–1925*

[Source: April, 1925 Bulletin of the National Association of Wool Manufacturers. Shows wage increases and decreases by the American Woolen Co. from December 31, 1915, to July 27, 1925. Figures for 1925 compiled by the United States Tariff Commission]

Date	Increase [1] on current wages	Equivalent increase [1] on base wage of Dec. 31, 1915	Relative wage levels	Date	Increase [1] on current wages	Equivalent increase [1] on base wage of Dec. 31, 1915	Relative wage levels
	Per cent	*Per cent*	*Per cent*		*Per cent*	*Per cent*	*Per cent*
Dec. 31, 1915	----	----	100.00	June 17, 1918	9.95	16.91	186.82
Jan. 31, 1916	5.88	5.88	105.88	June 2, 1919	18.25	34.16	220.98
Apr. 17, 1916	10.13	10.73	116.61	Dec. 1, 1919	12.50	27.62	248.60
Dec. 4, 1916	9.92	11.56	128.17	May 31, 1920	15.00	37.29	285.89
May 1, 1917	9.23	11.83	140.00	Dec. 20, 1920	−22.50	−64.33	221.56
Oct. 8, 1917	9.93	13.90	153.90	Apr. 30, 1923	12.50	27.70	249.26
Mar. 25, 1918	10.40	16.01	169.91	July 27, 1925	−10.00	−24.93	224.33

[1] A minus sign (−) before a figure indicates a decrease.

TABLE 11.—*Activity of wool spindles in the United States, 1913–1926*

[Source: Statistical Abstract of the United States for years prior to 1922, and reports of the Bureau of the Census for subsequent periods]

Date	Woolen		Worsted	
	Number reporting	Per cent idle	Number reporting	Per cent idle
1913	906,000	23	1,592,000	26
1914	986,000	22	1,476,000	23
1919	2,153,000	19	2,290,000	23
1920	2,259,000	28	2,331,000	22
1921—January	2,298,000	59	2,331,000	43
April	2,284,000	24	2,356,000	13
July	2,309,000	21	2,367,000	13
October	2,306,000	20	2,391,000	8
1922—January	2,288,000	27	2,436,000	14
April	2,319,000	17	2,502,000	38
July	2,305,000	16	2,470,000	32
October	2,321,000	16	2,522,000	11
1923—January	2,294,000	15	2,554,000	11
April	2,269,000	10	2,473,000	6
July	2,281,000	14	2,424,000	9
October	2,299,000	16	2,574,000	16
1924—January	2,345,000	19	2,563,000	27
April	2,292,000	18	2,502,000	28
July	2,281,000	26	2,598,000	45
October	2,276,811	17	2,595,686	25
1925—January	2,262,481	19	2,611,601	26
April	2,283,291	19	2,657,470	37
July	2,292,202	24	2,612,700	39
October	2,296,679	21	2,634,366	24
1926—January	2,312,307	31	2,603,398	28
April	2,315,160	28	2,618,216	34
July	2,322,391	31	2,600,015	40
October	2,270,259	21	2,609,130	22

TABLE 12.—*Activity of wool looms in the United States, 1913–1926*

[Source: Statistical Abstract of the United States for years prior to 1922, and reports of the Bureau of the Census for subsequent periods]

Date	Wider than 50 inches reed space		50 inches reed space or less		Carpet and rug looms	
	Number reporting	Per cent idle	Number reporting	Per cent idle	Number reporting	Per cent idle
1913	39,254	20	11,984	27	2,683	32
1914	36,658	27	10,817	23	2,467	33
1919	60,187	22	18,374	24	7,930	46
1920	61,465	32	18,139	27	8,559	32
1921—January	62,687	54	18,147	49	8,574	50
April	62,114	26	17,932	29	8,535	54
July	62,063	20	18,119	26	8,618	50
October	62,691	23	17,873	25	8,568	27
1922—January	62,652	34	18,395	27	8,854	22
April	62,811	40	18,455	36	8,978	21
July	62,828	36	18,381	34	9,152	22
October	63,567	23	18,025	21	9,276	17
1923—January	63,397	19	17,251	14	9,217	14
April	60,591	13	17,069	15	9,038	14
July	58,618	18	16,839	17	8,308	15
October	62,179	23	17,341	19	9,099	14
1924—January	62,218	27	17,297	19	9,226	18
April	59,909	29	17,044	21	9,375	27
July	60,774	38	17,181	27	9,442	32
October	60,534	28	17,546	24	9,560	23
1925—January	59,790	25	17,239	25	9,662	20
April	60,573	32	17,638	25	9,733	24
July	60,860	36	17,219	30	9,653	27
October	60,812	29	17,233	28	9,669	29
1926—January	60,929	35	17,095	29	9,564	27
April	61,080	40	17,307	32	9,619	29
July	61,364	45	16,965	37	9,609	35
October	60,902	32	16,789	31	9,548	34

TOTAL OF TABLES 14 AND 15

TABLE 13.—*Total products and materials—Imports for consumption—Revenue 1891–1926*

[Compiled according to tariff acts by U. S. Tariff Commission]

Fiscal year (unless otherwise stated)	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	Pounds				*Per cent*
1891 Oct. 6, 1890, to June 30, 1891		$15,494,912	$14,794,599		95.48
1892		29,456,413	26,975,961		91.57
1893		30,705,213	31,154,735		101.46
1894		15,776,191	15,814,565		100.23
1895 July 1 to Dec. 31, 1894		5,672,621	5,151,950		90.82
Total 1,548 days, act of 1890		96,255,230	93,891,879		97.54
Annual average act of 1890		22,778,445	22,396,735		98.32
1895 Jan. 1 to June 30, 1895		25,251,088	12,399,087		49.10
1896		39,662,326	19,230,172		48.47
1897		35,496,933	18,698,106		52.67
1898 July 1 to July 24, 1897		2,682,515	1,230,615		45.87
Total 1,306 days, act of 1894		103,615,279	51,695,924		49.89
Annual average act of 1894		41,341,436	20,136,973		48.71
1898 July 25, 1897, to June 30, 1898		6,732,812	6,962,709		103.42
1899		9,578,689	10,075,757		105.19
1900		10,867,851	10,716,528		98.61
1901		9,577,064	9,612,557		100.37
1902		11,094,982	11,183,305		100.80
1903		12,309,575	12,854,623		104.43
1904		12,230,084	12,364,553		101.10
1905		12,744,089	12,750,607		100.05
1906		14,975,765	15,145,640		101.13
1907		15,185,148	15,127,882		99.62
1908		13,812,056	13,731,965		99.42
1909		11,900,906	11,976,832		100.64
1910 July 1 to Aug. 5, 1909		1,507,984	1,517,974		100.66
Total 4,394 days, act of 1897		142,716,118	143,430,725		100.50
Annual average act of 1897		11,855,116	11,913,649		100.49
1910 (Aug. 6, 1909, to June 30, 1910		13,942,933	14,034,433		100.66
1911		11,685,128	11,584,280		99.14
1912		8,184,780	7,802,951		95.33
1913		7,780,572	7,494,605		96.32
1914 July 1 to Dec. 31, 1913		3,722,158	3,486,916		93.67
Total 1,609 days, act of 1909		45,315,550	44,412,985		98.01
Annual average act of 1909		10,279,852	10,074,596		98.01
1914 (Jan. 1 to June 30, 1914)	16,576,336	16,371,340	5,765,729	$0.988	35.22
1915	20,136,348	18,673,327	6,593,022	.928	35.30
1916	9,993,433	10,432,675	3,706,539	1.044	35.53
1917	8,259,743	10,431,263	3,703,224	1.263	35.50
1918	3,672,601	6,253,946	2,217,356	1.703	35.46
1919 (July 1 to Dec. 31, 1918)	1,378,925	2,823,956	998,702	2.048	35.37
1919 (calendar year	2,710,108	7,105,907	2,498,637	2.622	35.17
1920 (calendar year)	7,028,342	18,458,498	6,474,928	2.626	35.08
1921 (calendar year	[2] 8,415,933	16,760,539	7,419,022	1.992	44.26
1922 (Jan. 1 to Sept. 21, 1922)	[3] 6,886,080	12,476,067	7,448,774	1.812	59.70
Total (3,196 days, act of 1913)	84,989,719	119,789,433	46,830,178	1.409	39.09
Annual average (act of 1913)	9,736,739	13,723,528	5,363,894	1.409	39.09
1922 (Sept. 22 to Dec. 31, 1922)	1,787,001	3,509,301	2,535,030	1.964	72.24
1923 (calendar year)	10,766,496	20,127,887	14,757,796	1.869	73.32
1924 (calendar year)	11,350,314	20,481,672	15,059,603	1.805	73.53
1925 (calendar year)	10,649,145	22,022,620	15,593,063	2.068	70.80
1926 (calendar year)	10,468,151	21,180,044	15,000,238	2.023	71.25

[1] Total woven fabrics of wool, mohair, alpaca, etc. (including those weighing not over 4 ounces per square yard and those weighing over 4 ounces per square yard) such as are dutiable under pars. 1108 and 1109 of the tariff act of 1922.

[2] Includes, under the emergency tariff act, 3,420,865 pounds, valued at $6,648,942, paying, on the basis of 45 cents a pound in addition to the ad valorem rates; total duty of $3,871,521, equivalent to 58.23 per cent ad valorem.

[3] Includes 6,823,850 pounds, valued at $12,467,492, subject to the emergency tariff act surtax of 45 cents a pound and paying total duty of $7,445,346, equivalent to 59.72 per cent ad valorem.

TABLE 14.—*Total woven fabrics of wool, mohair, alpaca, etc., weighing not over 4 ounces per square yard* [1]*—Imports for consumption—Revenue, 1891–1926*

[Compiled according to tariff acts by U. S. Tariff Commission]

Fiscal year (unless otherwise stated)	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	Pounds				*Per cent*
1891 (Oct. 6, 1890, to June 30, 1891)		$6,895,482	$6,879,833		99.77
1892		11,301,484	11,521,184		101.94
1893		10,950,457	11,429,743		104.38
1894		5,238,479	5,556,208		106.07
1895 (July 1 to Dec. 31, 1894)		1,471,094	1,590,985		108.15
Total (1,548 days, act of 1890)		35,856,996	36,977,953		103.13
Annual average (act of 1890)		8,454,653	8,718,962		103.13
1895 (Jan. 1, to June 30, 1895)		11,559,714	5,722,746		49.51
1896		19,497,468	9,622,585		49.35
1897		18,203,716	8,968,801		49.27
1898 (July 1 to July 24, 1897)		1,220,271	595,547		48.86
Total (936 days, act of 1894)		50,481,169	24,909,679		49.34
Annual average (act of 1894)		19,685,499	9,713,710		49.34
1898 (July 25, 1897, to June 30, 1898)	[2] 11,653,709	2,169,888	2,228,730	$0.186	102.44
1899	[2] 14,152,949	2,603,914	2,654,746	.184	101.95
1900	[2] 15,308,942	3,051,364	2,993,333	.199	98.10
1901	[2] 18,160,289	3,526,328	3,596,090	.194	101.98
1902	[2] 25,150,989	4,572,360	4,668,300	.182	102.10
1903	[2] 31,733,190	5,343,221	5,483,802	.168	102.63
1904	[2] 35,152,674	6,032,883	6,176,209	.172	102.38
1905	[2] 41,911,265	7,139,717	7,252,336	.170	101.58
1906	[2] 45,534,005	7,862,113	8,125,371	.173	103.35
1907	[2] 37,234,777	7,060,525	7,214,241	.190	102.18
1908	[2] 36,361,741	6,935,876	7,036,646	.191	101.45
1909	[2] 28,258,058	5,061,052	5,287,033	.180	104.05
1910 (July 1 to Aug. 5, 1909)	[2] 3,476,610	626,231	642,174	.180	102.50
Total (4,394 days, act of 1897)	[3] 344,089,198	62,005,472	63,359,011	.180	102.18
Annual average (act of 1897)	[2] 28,582,740	5,150,659	5,263,096	.180	102.18
1910 (Aug. 6, 1909, to June 30, 1910)	[2] 31,772,362	5,723,056	5,868,749	.180	102.55
1911	[2] 24,723,410	4,645,541	4,711,708	.188	101.42
1912	[2] 11,905,884	2,285,909	2,270,245	.192	99.31
1913	[2] 10,376,011	1,991,240	1,968,381	.192	98.85
1914 (July 1 to Dec. 31, 1913)	[2] 3,111,448	724,177	699,496	.233	96.59
Total (1,609 days, act of 1909)	[2] 81,889,115	15,369,923	15,518,579	.188	100.97
Annual average (act of 1909)	[2] 18,576,461	3,486,651	3,520,373	.188	100.97
1914 (Jan. 1 to June 30, 1914)	6,908,494	6,485,630	2,317,646	.939	35.74
1915	8,995,794	8,329,806	2,978,726	.926	35.76
1916	3,550,093	3,612,061	1,326,990	1.017	36.74
1917	1,803,032	2,454,649	921,857	1.361	37.56
1918	969,635	1,629,050	603,116	1.680	37.02
1918 (July 1 to Dec. 31, 1918)	396,340	775,137	285,398	1.956	36.82
1919 (calendar year)	487,567	1,289,719	470,689	2.645	36.50
1920 (calendar year)	1,850,299	4,982,684	1,797,480	2.693	36.07
1921 (calendar year)	[3] 1,576,101	3,658,568	1,553,955	2.321	42.47
1922 (Jan. 1 to Sept. 21, 1922)	[4] 942,629	1,875,008	1,111,829	1.989	59.30
Total (3,186 days, act of 1913)	27,479,984	35,092,312	13,367,686	1.277	38.09
Annual average (act of 1913)	3,148,210	4,020,306	1,531,452	1.277	38.09
1922 (Sept. 22 to Dec. 31, 1922)	224,961	440,635	308,110	1.959	69.92
1923 (calendar year)	855,454	1,617,255	1,123,297	1.891	69.46
1924 (calendar year)	1,052,814	2,051,952	1,417,234	1.949	69.07
1925 (calendar year)	1,070,574	2,447,737	1,627,153	2.286	66.48
1926 (calendar year)	1,007,080	2,205,123	1,484,745	2.190	67.33

[1] This table is the total of secondary tables 14a, b, c, d, and e.

[2] Square yards.

[3] Includes, under the emergency tariff act, 488,621 pounds, valued at $983,137, paying, on the basis of 45 cents a pound in addition to the ad valorem rates: total duty of $580,727, equivalent to 59.07 per cent ad valorem.

[4] Includes 938,415 pounds, valued at $1,866,482, subject to the emergency tariff act surtax of 45 cents a pound and paying total duty of $1,108,419, equivalent to 59.39 per cent ad valorem.

[illegible]

TABLE 15.—*Total woven fabrics of wool, mohair, alpaca, etc., weighing over 4 ounces per square yard*[1]*—Imports for consumption—Revenue, 1891–1926*

[Compiled according to tariff acts by U. S. Tariff Commission]

Fiscal year (unless otherwise stated)	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	Pounds				*Per cent*
1891 (Oct. 6, 1890, to June 30, 1891)	8,142,950	$8,509,430	$7,824,566	$1.045	91.95
1892	19,097,960	18,154,929	17,454,397	.951	96.14
1893	22,468,554	19,754,756	19,724,992	.879	99.85
1894	11,449,717	10,477,712	10,258,297	.915	97.91
1895 (July 1 to Dec. 31, 1894)	4,018,707	3,601,527	3,560,874	.896	98.87
Total (1,548 days, act of 1890)	65,177,888	60,498,354	58,823,126	.928	97.23
Annual average (act of 1890)	15,368,171	14,264,792	13,869,793	.928	97.23
1895 (Jan. 1 to June 30, 1895)	20,516,438	13,691,889	6,676,285	.667	48.76
1896	32,453,271	20,164,860	9,707,587	.621	48.14
1897	34,786,205	20,295,117	9,690,305	.583	47.75
1898 (July 1 to July 24, 1897)	2,395,168	1,382,244	655,068	.577	47.39
Total (936 days, act of 1894)	90,151,082	55,534,110	26,729,245	.616	48.13
Annual average (act of 1894)	35,155,069	21,655,629	10,423,263	.616	48.13
1898 (July 25, 1897, to June 30, 1898)	4,921,764	4,562,424	4,633,979	.927	101.57
1899	7,917,165	7,275,785	7,421,011	.919	102.00
1900	7,899,731	7,816,487	7,723,490	.989	98.81
1901	6,200,874	6,050,736	6,016,467	.976	99.43
1902	6,740,499	6,522,622	6,515,003	.968	99.88
1903	7,131,748	6,866,657	6,870,621	.963	100.06
1904	6,405,005	6,197,151	6,188,344	.968	99.86
1905	5,550,016	5,604,322	5,498,271	1.010	98.11
1906	7,119,809	7,113,052	7,020,269	.999	98.70
1907	7,891,432	8,124,623	7,913,441	1.030	97.40
1908	6,662,752	6,875,180	6,695,219	1.032	97.38
1909	6,718,821	6,819,854	6,689,799	1.015	98.09
1910 (July 1 to Aug. 5, 1909)	894,574	881,753	875,800	.986	99.32
Total (4,394 days, act of 1897)	82,054,190	80,710,646	80,061,714	.984	99.20
Annual average (act of 1897)	6,816,062	6,704,457	6,650,553	.984	99.20
1910 (Aug. 6, 1909, to June 30, 1910)	8,364,421	8,219,877	8,165,684	.983	99.34
1911	6,898,531	7,039,587	6,872,582	1.020	97.63
1912	5,493,963	5,898,850	5,632,706	1.074	95.49
1913	5,220,494	5,789,632	5,456,024	1.109	94.24
1914 (July 1 to Dec. 31, 1913)	2,556,267	2,997,981	2,766,520	1.173	92.28
Total (1,609 days, act of 1909)	28,533,676	29,945,927	28,893,516	1.049	96.49
Annual average (act of 1909)	6,472,836	6,793,201	6,554,463	1.049	96.49
1914 (Jan. 1 to June 30, 1914)	9,667,842	9,885,710	3,451,143	1.023	34.91
1915	11,130,554	10,345,521	3,614,296	.929	34.94
1916	6,443,310	6,820,614	2,379,839	1.059	34.89
1917	6,456,711	7,976,634	2,781,367	1.235	34.87
1918	2,702,966	4,624,896	1,614,240	1.711	34.90
1918 (July 1 to Dec. 31, 1918)	982,485	2,048,819	713,304	2.085	34.82
1919 (calendar year)	2,222,541	5,815,788	2,018,948	2.617	34.71
1920 (calendar year)	5,178,043	13,475,809	4,677,343	2.602	34.71
1921 (calendar year)	[2] 6,839,832	13,102,271	5,865,067	1.916	44.76
1922 (Jan. 1 to Sept. 21, 1922)	[3] 5,885,451	10,601,059	6,336,945	1.801	59.78
Total (3,186 days, act of 1913)	57,509,735	84,697,121	33,452,492	1.473	39.50
Annual average (act of 1913)	6,588,529	9,703,217	3,832,442	1.473	39.50
1922 (Sept. 22 to Dec. 31, 1922)	1,562,040	3,068,666	2,226,920	1.965	72.57
1923 (calendar year)	9,911,042	18,510,632	13,634,501	1.868	73.66
1924 (calendar year)	10,297,500	18,429,720	13,642,449	1.790	74.02
1925 (calendar year)	9,578,571	19,574,943	13,965,930	2.044	71.35
1926 (calendar year)	[4] 9,461,071	18,974,921	13,605,493	2.006	71.70

[1] This table is the total of secondary tables 15 a, b, c, d, and e.

[2] Includes, under emergency tariff act, 2,932,244 pounds, valued at $5,665,805, paying on the basis of 45 cents a pound in addition to the ad valorem rates, total duty of $3,290,794, equivalent to 58.08 per cent ad valorem.

[3] Includes 5,885,435 pounds, valued at $10,601,010, subject to the emergency tariff act surtax of 45 cents a pound and paying total duty of $6,336,927, equivalent to 59.78 per cent ad valorem.

[4] Woven fabrics weighing more than 4 ounces per square yard, wholly or in chief value of wool, mohair, alpaca, etc.

TABLE 15A.—*Cloths, woolen or worsted*[1]*—Imports for consumption—Revenue, 1891–1926*

Fiscal year (unless otherwise stated)	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	Pounds				*Per cent*
1891 (Oct. 6, 1890 to June 30, 1891)	6,165,893	$6,354,728	$5,877,311	$1.031	92.49
1892	13,847,357	12,739,733	12,436,533	.920	97.62
1893	14,646,924	12,806,922	12,809,558	.876	100.02
1894	7,869,907	7,010,290	6,949,470	.891	99.13
1895 (July 1 to Dec. 31, 1894)	2,367,183	2,101,607	2,084,243	.888	99.17
Total (1,548 days, act of 1890)	44,897,264	41,013,280	40,157,115	.913	97.91
Annual average (act of 1890)	10,586,241	9,670,444	9,468,570	.913	97.91
1895 (Jan. 1 to June 30, 1895)	20,372,935	13,605,122	6,635,645	.668	48.77
1896	32,257,886	20,037,898	9,646,354	.621	48.00
1897	34,658,269	20,204,532	9,645,895	.583	47.74
1898 (July 1 to July 24, 1897)	2,389,637	1,378,257	653,076	.577	47.38
Total (936 days, act of 1894)	89,678,727	55,225,809	26,580,970	.616	48.13
Annual average (act of 1894)	34,970,871	21,535,705	10,365,442	.616	48.13
1898 (July 25, 1897, to June 30, 1898)	2,161,597	2,125,444	2,104,472	.983	99.01
1899	4,026,208	3,802,140	3,829,682	.944	100.72
1900	4,860,777	4,925,345	4,818,040	1.013	97.82
1901	3,737,733	3,863,358	3,750,387	1.034	97.08
1902	4,555,762	4,611,430	4,520,729	1.012	98.03
1903	4,721,345	4,808,461	4,701,314	1.018	97.77
1904	3,915,777	4,037,957	3,925,049	1.031	97.20
1905	3,630,424	3,878,802	3,722,067	1.069	95.96
1906	4,646,460	4,892,635	4,724,353	1.053	96.56
1907	5,166,097	5,586,102	5,326,764	1.081	95.36
1908	4,317,950	4,599,274	4,416,603	1.065	96.03
1909	4,472,635	4,777,447	4,585,899	1.068	95.99
1910 (July 1 to Aug. 5, 1909)	581,684	602,052	585,641	1.035	97.27
Total (4,394 days, act of 1897)	50,794,449	52,510,447	51,011,000	1.034	97.14
Annual average (act of 1897)	4,219,384	4,361,928	4,237,373	1.034	97.14
1910 (Aug. 6, 1909, to June 30, 1910)	5,315,946	5,502,088	5,352,113	1.035	97.27
1911	4,823,553	5,226,551	4,985,415	1.084	95.36
1912	4,213,681	4,683,768	4,420,469	1.111	94.38
1913	4,033,462	4,642,689	4,318,313	1.151	93.01
1914 (July 1 to Dec. 31, 1913)	1,984,690	2,298,765	2,132,362	1.158	92.76
Total (1,609 days, act of 1909)	20,371,332	22,353,861	21,208,672	1.097	94.88
Annual average (act of 1909)	4,621,216	5,070,950	4,811,165	1.097	94.88
1914 (Jan. 1 to June 30, 1914)	9,474,620	9,725,042	3,403,765	1.026	35.00
1915	10,996,064	10,218,059	3,576,161	.929	35.00
1916	6,316,206	6,673,236	2,335,633	1.057	35.00
1917	6,304,534	7,767,818	2,718,736	1.232	35.00
1918	2,655,738	4,535,487	1,587,420	1.708	35.00
1918 (July 1 to Dec. 31, 1918)	952,265	1,973,175	690,611	2.072	35.00
1919 (calendar year)	2,072,115	5,484,234	1,919,482	2.647	35.00
1920 (calendar year)	4,840,351	12,694,989	4,443,246	2.623	35.00
1921 (calendar year)	[2] 6,361,752	12,297,517	5,575,280	1.933	45.34
1922 (Jan. 1 to Sept. 21, 1922)	[3] 5,665,010	10,163,772	6,106,568	1.794	60.08
Total (3,186 days, act of 1913)	55,638,655	81,533,329	32,356,902	1.465	39.69
Annual average (act of 1913)	6,374,171	9,340,761	3,706,927	1.465	39.69
1922 (Sept. 22 to Dec. 31, 1922)	[4] 1,562,040	3,068,666	2,226,920	1.965	72.57
1923 (calendar year)	[4] 9,911,042	18,510,632	13,634,501	1.868	73.66
1924 (calendar year)	[4] 10,297,500	18,429,720	13,642,449	1.790	74.02
1925 (calendar year)	[4] 9,578,571	19,574,943	13,965,930	2.044	71.35
1926 (calendar year)	[4] 9,461,071	18,974,921	13,605,493	2.006	71.70

[1] Cloths, weighing over 4 ounces per square yard, wholly or in part of wool, mohair, alpaca, etc. Imports shown for act of 1913 do not include cloths of mohair (see Table 14d).

[2] Includes, under the emergency tariff act, 4,448,205 square yards (2,824,774 pounds) valued at $5,430,859, paying on the basis of 45 cents a pound in addition to 35 per cent ad valorem, total duty of $3,171,949.

[3] Includes 8,282,360 square yards (5,664,994 pounds), valued at $10,163,723, subject to emergency tariff act surtax of 45 cents a pound and paying total duty of $6,106,550.

[4] Woven fabrics, weighing more than 4 ounces per square yard, wholly or in chief value of wool, mohair, alpaca, etc.

TABLE 15B.—*Dress goods, etc., weighing over 4 ounces per square yard, of wool, mohair, alpaca, etc.*[1]*—Imports for consumption—Revenue, 1891–1914*

Fiscal year (unless otherwise stated)	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	Pounds				*Per cent*
1891 (Oct. 6, 1890, to June 30, 1891)	84,135	$102,136	$88,087	$1.214	86.25
1892	200,579	252,304	214,407	1.258	84.98
1893	1,488,242	1,763,257	1,536,455	1.185	87.14
1894	1,907,655	2,113,181	1,895,958	1.108	89.72
1895 (July 1 to Dec. 31, 1894)	415,770	506,199	436,038	1.217	86.14
Total (1,548 days, act of 1890)	4,096,381	4,737,077	4,170,945	1.156	88.05
Annual average (act of 1890)	965,878	1,116,946	983,459	1.156	88.05
1898 (July 25, 1897, to June 30, 1898)	2,676,144	2,351,424	2,446,269	.879	104.03
1899	3,716,399	3,321,608	3,432,368	.894	103.33
1900	2,899,381	2,767,413	2,777,574	.954	100.37
1901	2,355,408	2,101,665	2,173,547	.892	103.42
1902	2,111,894	1,851,492	1,930,785	.877	104.28
1903	2,341,049	1,999,683	2,107,767	.854	105.41
1904	2,435,208	2,108,175	2,212,267	.866	104.94
1905	1,822,559	1,637,503	1,685,744	.898	102.96
1906	2,343,819	2,116,734	2,183,287	.903	103.14
1907	2,633,571	2,460,584	2,503,954	.934	101.76
1908	2,067,258	2,016,425	2,014,554	.975	99.91
1909	56,738	66,557	61,477	1.173	92.37
1910 (July 1 to Aug. 5, 1909)	297,990	266,370	276,294	.894	103.72
Total (4,394 days, act of 1897)	27,757,418	25,065,633	25,805,887	.903	102.95
Annual average (act of 1897)	2,305,748	2,082,147	2,143,639	.903	102.95
1910 (Aug. 6, 1909, to June 30, 1910)	2,723,294	2,434,326	2,525,021	.894	103.72
1911	1,680,442	1,474,879	1,542,450	.878	104.58
1912	861,007	815,567	823,401	.947	100.96
1913	860,142	855,413	844,551	.995	98.73
1914 (July 1 to Dec. 31, 1913)	506,453	640,034	574,380	1.264	89.74
Total (1,609 days, act of 1909)	6,631,338	6,220,219	6,309,803	.938	101.44
Annual average (act of 1909)	1,504,312	1,411,049	1,431,372	.938	101.44

[1] Recorded separately under the acts of 1890, 1897, and 1909 only. Separate record under the acts of 1897 and 1909 was due to the provision that on dress goods, coat linings, Italian cloths, bunting, and goods of similar description or character, composed wholly or in part of wool, mohair, alpaca, etc., weighing over 4 ounces per square yard the rates of duty should be the same as those imposed on cloths.

TABLE 15c.—*Dress goods, etc., weighing over 4 ounces per square yard, of wool, mohair, alpaca, etc., with cotton warp*[1]*—Imports for consumption—Revenue, 1891–1914*

Fiscal year (unless otherwise stated)	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	Pounds				*Per cent*
1891 (Oct. 6, 1890, to June 30, 1891)	1,816,780	$1,973,956	$1,786,361	$1.087	90.50
1892	4,965,652	5,077,620	4,723,697	1.023	93.03
1893	6,253,666	5,109,204	5,306,215	.817	103.86
1894	1,904,111	1,295,762	1,353,690	.808	104.47
1895 (July 1 to Dec. 31, 1894)	1,210,344	972,385	1,018,744	.803	104.77
Total (1,548 days, act of 1890)	15,850,553	14,428,927	14,188,707	.910	98.34
Annual average (act of 1890)	3,737,372	3,402,169	3,345,528	.910	98.34
1898 (July 25, 1897, to June 30, 1898)	62,830	65,530	63,250	1.043	96.52
1899	127,514	116,827	119,575	.916	102.35
1900	81,087	77,199	77,551	.952	100.46
1901	41,674	35,811	37,447	.859	104.57
1902	42,256	33,458	35,991	.792	107.57
1903	48,562	42,673	44,120	.879	103.39
1904	24,357	25,249	24,434	1.037	96.77
1905	28,151	31,806	29,738	1.130	93.50
1906	32,533	27,330	28,887	.840	105.70
1907	10,089	11,613	10,814	1.151	93.12
1908	186,703	186,426	184,351	.999	98.89
1909	2,075,604	1,883,801	1,942,311	.908	103.11
1910 (July 1 to Aug. 5, 1909)	1,711	1,945	1,823	1.137	93.73
Total (4,394 days, act of 1897)	2,763,071	2,539,668	2,600,292	.919	102.39
Annual average (act of 1897)	229,522	210,965	216,001	.919	102.89
1910 (Aug. 6, 1909, to June 30, 1910)	204,645	179,404	178,493	.877	99.49
1911	290,798	252,344	252,196	.868	99.94
1912	305,368	274,867	270,347	.900	99.94
1913	213,717	185,602	185,424	.868	99.90
1914 (July 1 to Dec. 31, 1913)	22,654	17,742	18,545	.783	104.53
Total (1,609 days, act of 1909)	1,037,182	909,959	905,005	.877	99.46
Annual average (act of 1909)	235,284	206,423	205,299	.877	99.46

[1] Recorded separately under the acts of 1890, 1897, and 1909 only. Separate record under the act of 1897 was due to the provision that on dress goods, coat linings, Italian cloths, and goods of similar description or character, of which the warp consisted wholly of cotton or other vegetable material with the remainder of the fabric composed wholly or in part of wool, mohair, alpaca, etc., weighing over four ounces per square yard, the rates of duty should be the same as those imposed on cloths; and under the act of 1909, to the provision that on such heavyweight cotton-warp dress goods, etc., the rates of duty should be 5 per cent less than those imposed on cloths.

TABLE 15D.—*Wool blankets more than 3 yards in length* [1]*—Imports for consumption—Revenue, 1895-1914*

Fiscal year (unless otherwise stated)	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	Pounds				*Per cent*
1895 (Jan. 1 to June 30, 1895)	7,656	$4,708	$2,202	$0.615	46.77
1896	13,131	5,877	2,647	.448	45.04
1897	4,236	2,771	1,289	.654	46.52
1898 (July 1 to July 24, 1897)	18	8	3	.444	37.50
Total (936 days, act of 1894)	25,041	13,364	6,141	.534	45.95
Annual average (act of 1894)	9,765	5,211	2,395	.534	45.95
1898 (July 25, 1897, to June 30, 1898)	6,036	4,532	4,967	.751	109.60
1899	7,197	5,872	6,227	.816	106.05
1900	14,978	10,010	11,480	.668	114.69
1901	16,395	9,157	11,256	.559	122.92
1902	9,763	8,333	8,637	.854	103.65
1903	6,981	4,767	5,461	.683	114.56
1904	11,156	9,027	9,401	.809	104.14
1905	15,229	11,514	12,616	.756	109.57
1906	17,684	14,600	15,317	.779	104.91
1907	15,313	11,926	13,096	.779	109.81
1908	5,813	4,500	4,909	.774	109.09
1909	7,986	4,956	5,837	.621	117.78
1910 (July 1 to Aug. 5, 1909)	646	543	572	.841	105.34
Total (4,394 days, act of 1897)	135,177	99,737	109,776	.738	110.07
Annual average (act of 1897)	11,229	8,285	9,119	.738	110.07
1910 (Aug. 6, 1909, to June 30, 1910)	5,903	4,965	5,229	.841	105.32
1911	11,041	8,274	9,195	.749	111.13
1912	6,013	5,153	5,377	.857	104.35
1913	33,641	26,148	28,898	.777	110.52
1914 (July 1 to Dec. 31, 1913)	4,160	3,473	3,659	.835	105.36
Total (1,609 days, act of 1909)	60,758	48,013	52,358	.790	109.05
Annual average (act of 1909)	13,783	10,892	11,877	.790	109.05

[1] Blankets more than 3 yards in length were recorded separately under the acts of 1894, 1897, and 1909 only. Imports of these, here shown, were dutiable as "cloths" and not as blankets. (For imports of wool blankets not over 3 yards in length see Table 27.)

TABLE 15E.—*Wool flannels weighing over 4 ounces per square yard* [1]*—Imports for consumption—Revenue, 1891–1922*

Fiscal year (unless otherwise stated)	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	Pounds				*Per cent*
1891 (Oct. 6, 1890, to June 30, 1891)	76,142	$78,610	$72,807	$1.032	92.62
1892	84,372	85,272	79,760	1.011	93.54
1893	79,722	75,373	72,764	.945	96.54
1894	68,044	58,479	59,179	.859	101.20
1895 (July 1 to Dec. 31, 1894)	25,410	21,336	21,849	.840	102.40
Total (1,548 days, act of 1890)	333,690	319,070	306,359	.956	96.02
Annual average (act of 1890)	78,680	75,233	72,236	.956	96.02
1895 (Jan. 1 to June 30, 1895)	135,847	82,059	38,438	.604	46.84
1896	182,254	121,085	58,586	.664	48.39
1897	123,700	87,814	43,121	.710	49.10
1898 (July 1 to July 24, 1897)	5,513	3,979	1,989	.722	49.99
Total (936 days, act of 1894)	447,314	294,937	142,134	.659	48.19
Annual average (act of 1894)	174,433	115,013	55,426	.659	48.19
1898 (July 25, 1897, to June 30, 1898)	15,157	15,494	15,021	1.022	96.95
1899	39,847	29,338	33,159	.736	113.02
1900	43,508	36,520	38,845	.839	106.37
1901	49,664	40,745	43,830	.820	107.57
1902	20,824	17,909	18,861	.860	105.32
1903	13,811	11,073	11,959	.802	108.00
1904	18,507	16,743	17,193	.905	102.69
1905	53,653	44,697	48,106	.833	107.63
1906	79,313	61,753	68,425	.779	110.80
1907	66,362	54,398	58,813	.820	108.12
1908	85,028	68,555	74,802	.806	109.11
1909	105,858	87,093	94,275	.823	108.25
1910 (July 1 to Aug. 5, 1909)	12,543	10,843	11,470	.864	105.78
Total (4,394 days, act of 1897)	604,075	495,161	534,759	.820	108.00
Annual average (act of 1897)	50,179	41,132	44,421	.820	108.00
1910 (Aug. 6, 1909, to June 30, 1910)	114,633	99,094	104,828	.864	105.79
1911	92,697	77,539	83,326	.836	107.46
1912	107,894	119,495	113,112	1.108	94.66
1913	79,532	79,780	78,838	1.003	98.82
1914 (July 1 to Dec. 31, 1913)	38,310	37,967	37,574	.991	98.96
Total (1,609 days, act of 1909)	433,066	413,875	417,678	.956	100.92
Annual average (act of 1909)	98,241	93,887	94,750	.956	100.92
1914 (Jan. 1 to June 30, 1914)	193,222	160,668	47,378	.832	29.49
1915	134,490	127,462	38,135	.948	29.92
1916	127,104	147,378	44,206	1.160	29.99
1917	152,177	208,816	62,631	1.372	29.99
1918	47,228	89,409	26,820	1.893	30.00
1918 (July 1 to Dec. 31, 1918)	30,220	75,644	22,693	2.503	30.00
1919 (calendar year)	150,426	331,554	99,466	2.204	30.00
1920 (calendar year)	337,692	780,820	234,097	2.312	29.98
1921 (calendar year)	[2] 478,080	804,754	289,787	1.683	36.01
1922 (Jan. 1 to Sept 21, 1922)	[3] 220,441	437,287	230,377	1.984	52.68
Total (3,186 days, act of 1913)	1,871,080	3,163,792	1,095,590	1.691	34.63
Annual average (act of 1913)	214,358	362,456	125,515	1.691	34.63

[1] The words "for underwear" were used in listing imports under the acts of 1890, 1894, 1897, and 1909. Imports shown for the acts of 1897 and 1909 include all flannels except those recorded in square yards and at the rates of duty provided for dress goods weighing not over 4 ounces per square yard. (For imports of lightweight wool flannels see Table 14e). Imports shown for act of 1913 are the inclusive totals for "flannels composed wholly or in chief value of wool." Imports of wool flannels under the act of 1922 are not separately recorded but are dutiable as woven fabrics of wool, under paragraphs 1108 or 1109, according to weight.

[2] Includes, under the emergency tariff act, 107,470 pounds, valued at $234,946, paying, on the basis of 45 cents a pound in addition to the ad valorem rates, total duty of $118,845.

[3] Includes 220,441 pounds, valued at $437,287, subject to emergency tariff act surtax of 45 cents a pound and paying total duty of $230,377.

TABLE 16.—*Woolens and worsteds—Relation of imports and exports to production in census years 1889–1925*

Census year	Value of domestic production [1]	Value of imports for consumption [2]	Value of domestic exports [3]	Relation of imports to domestic production	Relation of exports to domestic production
				Per cent	*Per cent*
1889	$158,405,083	$30,370,494	(4)	19.17	----------
1899	174,969,962	9,879,699	(4)	5.65	----------
1904	225,047,678	12,230,034	(4)	5.43	----------
1909	285,754,088	11,900,906	(4)	4.16	----------
1914	256,097,020	20,093,498	(4)	7.85	----------
1919	712,106,911	7,105,507	$19,799,723	1.00	2.78
1921	533,315,153	16,760,839	4,040,988	3.14	.76
1923	701,697,838	20,127,887	2,346,953	2.87	.33
1925	613,719,460	22,022,680	1,132,971	3.59	.18

[1] Total of (a) suitings, dress goods, overcoatings, and cloakings; (b) flannels for underwear and domett flannels and shirtings; (c) satinets and linseys; and (d) all other woolen and worsted woven goods, as shown in more detail in Tables 4 and 8. Data here shown do not include blankets, carriage robes, and shawls, which are separately provided for in the tariff act as articles rather than piece goods, and do not include upholstery goods, which are mainly pile fabrics and therefore separately provided for.

[2] Woolens and worsteds of the character provided for in paragraphs 1108 and 1109 of the tariff act of 1922. For details see Table 13.

[3] Recorded as "cloths and dress goods."

[4] Not recorded.

TABLE 17.—*Percentage, in value, of general imports of woven fabrics of wool imported from the United Kingdom, France, Germany, Belgium, and all other countries, 1891–1925*

Fiscal year	Total value	Percentage imported from—				
		United Kingdom	France	Germany	Belgium	All other countries
1891	$30,278,066	48.66	27.20	22.09	1.50	0.55
1892	29,239,645	48.91	27.89	20.84	1.78	.58
1893	31,600,753	51.83	25.36	20.45	1.65	.71
1894	15,337,283	46.52	26.92	23.98	1.99	.59
1895	30,698,013	58.89	17.65	21.65	1.19	.62
1896	41,816,453	61.11	16.52	20.39	1.32	.66
1897	33,794,514	54.08	18.26	25.20	1.42	1.04
1898	10,001,657	53.28	17.44	27.47	.93	.88
1899	9,815,914	51.08	21.96	24.38	1.44	1.14
1900	11,001,614	56.23	20.91	20.74	1.46	.66
1901	9,347,469	48.91	26.86	22.27	.93	1.03
1902	11,205,455	54.61	22.89	20.12	1.19	1.19
1903	12,377,824	57.78	21.47	17.82	1.64	1.29
1904	12,364,432	56.17	22.59	17.88	1.58	1.78
1905	12,589,722	60.49	18.21	18.06	1.63	1.61
1906	15,207,106	52.62	18.34	24.01	2.42	2.61
1907	14,972,445	41.74	24.94	27.86	2.07	3.39
1908	14,077,600	44.58	23.84	26.08	2.95	2.55
1909	11,542,142	45.18	20.46	27.60	4.23	2.53
1910	15,799,804	50.82	19.04	23.88	3.99	2.27
1911	11,405,073	55.95	18.24	18.93	4.91	1.97
1912	7,909,676	61.99	12.23	16.69	6.71	2.38
1913	8,210,073	58.88	13.75	17.81	7.52	2.04
1914	19,567,257	51.47	19.67	21.75	4.23	2.88
1915	17,583,599	66.76	10.70	15.70	4.22	2.62
1916	8,284,943	96.34	.69	.08	1.54	1.35
1917	8,677,554	86.03	.89	----------	.39	12.69
1918	5,607,323	88.04	.32	----------	----------	11.64
1918 [1]	2,834,186	99.36	.12	----------	----------	.52
1919 [2]	6,805,515	97.27	1.27	----------	.03	1.43
1920 [2]	20,655,284	84.19	9.79	.94	2.16	2.92
1921 [2]	14,542,810	81.60	11.46	1.25	3.40	2.29
1922 [2]	15,479,678	84.18	7.70	2.04	3.68	2.40
1923 [2]	21,246,991	81.93	10.01	5.72	.76	1.58
1924 [2]	20,845,768	76.05	9.88	10.72	1.60	1.75
1925 [2]	22,001,859	75.63	11.32	8.25	1.72	3.08

[1] July 1 to Dec. 31, 1918.

[2] Calendar year.

TABLE 18.—*Domestic wools—Average annual prices, per pound, in Boston, 1911–1923* [1]

[Source: Fairchild News Service, N. Y.]

	Pre-war average 1911–1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
	Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
Fine staple territory	58.847	59.000	70.625	84.416	156.509	181.458	177.500	160.416	82.833	123.416	137.864
Ohio de laine	62.847	62.708	75.000	88.208	160.937	186.875	188.958	187.916	92.604	128.416	140.593
Half-blood territory combing	55.996	57.183	67.208	76.166	145.125	171.416	164.000	141.666	68.500	107.541	129.968
Half-blood Ohio combing	56.868	56.271	74.015	83.333	139.599	166.486	160.573	136.916	67.732	101.236	120.102
Three-eighths blood territory combing	51.591	48.762	65.063	72.166	125.250	150.208	126.250	100.416	52.473	85.666	105.989
Three-eighths blood Ohio combing	49.842	48.586	67.688	77.815	125.079	145.322	125.718	99.145	52.316	82.788	103.786
Quarter-blood territory combing	48.444	45.013	61.330	67.944	113.416	136.625	110.260	80.916	41.041	75.041	80.895
Quarter-blood Ohio combing	45.743	44.347	62.246	70.217	113.840	132.608	111.159	84.347	44.492	71.289	88.572
Average domestic wool price	53.772	52.733	67.899	77.533	134.967	158.124	145.545	128.967	62.748	96.924	114.536

[1] These prices are figured on the scoured basis. The shrinkages allowed were as follows: Fine staple territory, 63 per cent; Ohio fine delaine, 60 per cent; half-blood territory, 60 per cent; half-blood Ohio, 53½ per cent; three-eighths blood territory, 55 per cent; three-eighths blood Ohio, 47 per cent; quarter-blood territory, 50 per cent; quarter-blood Ohio, 42½ per cent.

TABLE 19.—*Foreign wools—Average annual prices, per pound, in Boston, 1911–1923* [1]

[Source: Fairchild News Service, N. Y.]

	Pre-war average 1911–1913	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923
	Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
Australian 64s–70s	81.200	64.216	70.610	89.310	161.013	181.099	201.685	190.937	93.690	153.999	148.848
Superior 12 months Cape	(2)	(2)	[3]65.714	79.064	150.500	167.500	160.447	167.356	72.460	160.593	141.816
Australian 60s	75.396	59.000	66.001	85.598	147.409	162.833	185.725	166.750	79.562	137.718	134.387
Montevideo 60s	62.704	52.129	70.876	83.837	135.051	149.960	132.368	120.293	54.645	100.676	127.302
Australian 56s	65.147	53.583	63.152	77.854	125.854	148.279	132.162	113.302	51.562	106.447	102.727
Montevideo 56s	55.668	46.564	66.444	78.474	122.874	141.603	117.677	96.713	45.953	84.639	108.813
Australian 50s	60.382	49.673	60.312	74.371	119.958	141.104	115.435	88.542	41.604	89.208	88.114
Montevideo 50s	53.979	41.518	60.089	69.334	105.892	122.695	102.116	79.068	37.226	73.429	93.937
Average foreign wool price	64.925	52.383	65.399	79.731	133.569	151.884	143.456	127.870	59.588	113.338	118.243

[1] These prices are figured on the scoured basis and, for years under the act of 1909, the emergency tariff act, and the act of 1922, include the tariff duty. The shrinkages allowed were as follows: Australian 64s–70s, 48 per cent; Australian 60s, 48 per cent; Australian 56s, 38 per cent; Australian 50s, 33 per cent; Superior 12 months Cape, 60 per cent; Montevideo 60s, 43 per cent; Montevideo 56s, 38 per cent; Montevideo 50s, 33 per cent.

[2] No prices available.

[3] Includes price for June only.

TABLE 20.—*Domestic woolens and worsteds—Average annual price, per linear yard, of specific fabrics, 1911–1924*

[Source: Fairchild News Service, New York City]

Style	Fabric	Manufacturer	Pre-war average, 1911–12–13	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924
			Cents	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
349	Serge, lightweight	Metcalf	132.50	125.00	127.50	140.00	170.00	275.00	(1)	405.00	360.00	250.00	250.00	250.00
386	do	do	160.83	152.50	152.50	165.00	197.50	340.00	(1)	500.00	455.00	325.00	330.00	380.00
354	do	do	164.16	155.00	150.00	162.50	192.50	325.00	(1)	500.00	440.00	315.00	325.00	365.00
3192	do	American Woolen	125.00	112.50	120.00	132.50	167.50	292.50	(1)	(1)	367.50	242.50	250.00	287.50
78	do	Cleveland Worsted	80.00	77.50	80.00	94.50	117.00	156.50	287.50	225.00	210.00	141.50	135.00	162.00
1813	do	Princeton	207.50	172.50	177.50	185.00	252.50	390.00	-------	450.00	575.00	375.00	377.00	412.50
2004	do	William Whitman	71.25	65.25	67.50	90.00	121.50	168.75	148.50	195.30	119.25	105.75	130.50	135.00
2001	do	do	104.25	90.00	112.50	121.50	184.50	315.00	229.50	342.00	209.00	191.00	225.00	218.00
9	do	do	91.46	88.20	102.90	110.25	147.40	265.00	210.00	313.60	171.50	171.50	183.75	(1)
4192	do	Coronet	127.50	110.00	115.00	127.50	162.50	282.50	(1)	(1)	367.50	250.00	250.00	287.50
4085	Serge (black), lightweight	Hockanum	228.33	212.50	200.00	200.00	262.50	375.00	612.50	675.00	600.00	425.00	450.00	487.50
F. S. G. 39-inch	Serge, lightweight	Pacific	49.16	42.50	45.00	65.00	117.50	110.00	140.00	152.50	85.00	95.00	102.50	102.50
3007-36-inch	Serge, all-wool	Hamilton	32.00	30.00	35.00	52.50	70.00	75.00	85.00	82.50	47.50	61.50	62.50	60.00
4040-50-inch	do	do	59.16	55.00	60.00	85.00	125.00	135.00	160.00	127.50	87.50	97.50	105.00	105.00
75-43/44-inch	do	do	48.25	43.00	52.50	72.00	92.00	107.00	125.00	112.50	72.50	82.50	87.50	87.50
349	Serge, heavyweight	Metcalf	135.00	122.50	135.00	155.00	190.00	320.00	275.00	480.00	250.00	242.50	275.00	277.50
336	do	do	161.66	145.00	160.00	180.00	225.00	385.00	340.00	600.00	325.00	320.00	355.00	365.00
354	do	do	165.83	142.50	155.00	175.00	215.00	370.00	320.00	590.00	315.00	315.00	345.00	350.00
3844-16-ounce	do	American Woolen	152.50	155.00	172.50	217.50	275.00	437.50	372.50	645.00	337.50	332.50	387.50	382.50
5048-15-ounce	do	do	149.16	140.00	162.50	195.00	242.50	380.00	317.50	512.50	277.50	272.50	312.50	320.00
78	do	Cleveland Worsted	(1)	(1)	(1)	100.00	128.50	210.00	190.00	300.00	147.50	132.50	155.00	157.50
1813	do	Princeton	212.50	172.50	177.50	202.50	282.50	440.00	(1)	737.50	387.50	360.00	405.00	405.00
4085	Serge (black), heavyweight	Hockanum	228.33	200.00	200.00	242.50	287.50	450.00	500.00	675.00	450.00	437.50	475.00	475.00
F. S. G. 39-inch	Serge, all-wool	Pacific	50.33	42.50	45.00	51.50	80.00	120.00	105.00	152.50	97.50	85.00	100.00	102.50
338-14-ounce	Clay, lightweight	American Woolen	137.50	132.50	132.50	150.00	180.00	312.00	(1)	(1)	402.50	250.00	277.50	327.50
200-16-ounce	do	do	150.00	142.50	147.50	167.50	200.00	365.00	(1)	(1)	462.50	285.00	300.00	262.50
9613-13-ounce	Wool Unfinished worsted	do	110.83	107.50	120.00	137.50	175.00	312.00	250.00	412.50	210.00	200.00	227.50	237.50
612-12-ounce	Vigoureux, standard lightweight.	Samuel Hird & Sons	105.00	105.00	107.50	120.00	152.50	217.50	(1)	360.00	272.50	217.50	222.50	250.50
612	Vigoureux, standard heavyweight.	do	108.75	107.00	122.50	140.00	177.50	282.50	257.50	390.00	217.50	207.50	242.50	242.50
1800-11-ounce	Cassimere	Warren Woolen Co	120.66	120.00	115.00	132.00	175.00	287.50	300.00	420.00	280.00	237.50	262.50	300.00
12-ounce	do	Geo. H. Gilbert	117.50	115.00	117.50	130.00	160.00	257.50	312.50	400.00	347.50	235.00	252.00	285.00
99	do	Cyril Johnson	(1)	105.00	112.50	120.00	147.50	250.00	285.00	350.00	290.00	212.50	235.00	270.00
70	do	do	(1)	(1)	(1)	145.00	185.00	325.00	290.00	400.00	230.00	225.00	275.00	290.00
28-ounce	St. George kersey	Frederick T. Lawrence & Co.	249.16	252.50	265.00	352.50	600.00	550.00	450.00	750.00	452.50	452.50	425.00	425.00

12-ounce	Paca thibet	Parker Wilder	97.50	92.50	102.50	122.50	247.50	247.50	247.50	247.50	147.50	257.50	187.50	190.00
7212	Thibet	American Woolen	95.00	87.50	87.50	102.50	137.50	190.00	(1)	337.50	240.00	185.00	197.50	222.50
319	Elmdale flannel	Sanford & Russell	89.30	83.30	81.00	94.50	137.50	235.00	275.00	257.50	230.00	155.00	190.00	202.50
C. G. S. 39-inch	Cotton-warp serge, lightweight	Pacific	27.54	23.50	23.50	26.00	38.50	55.00	67.50	62.50	70.00	38.50	45.00	50.00
C. G. S. 39-inch	Cotton-warp serge, heavyweight	do	27.38	23.50	23.50	32.50	43.40	57.50	50.00	72.50	45.00	38.50	48.50	50.00
3712	Tan, double-width, summer suitings.	Goodall Worsted	75.00	75.00	75.00	75.00	82.50	127.50	150.00	160.00	170.00	145.00	145.00	155.00
1800-13-ounce	Cassimere	Warren Woolen Co	134.16	120.00	135.00	150.00	205.00	335.00	310.00	460.00	255.00	250.00	305.00	320.00
Average annual price, all fabrics.			120.576	111.378	117.266	134.128	178.01	271.701	254.433	374.078	271.823	224.591	241.579	257.437

[1] No prices available.

TABLE 21.—*Domestic woolens and worsteds—Average annual prices, per linear yard, by classes, 1911–1924* [1]

[Source: Fairchild News Service, New York]

	Pre-war average 1911–12–13	1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924
Woolen suitings:	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
Cassimeres	124.10	115.00	120.00	155.40	174.50	291.00	259.50	406.00	280.50	232.00	265.90	293.00
Thibets	96.25	90.00	95.00	112.50	192.50	218.75	247.50	292.50	193.75	221.25	192.50	206.25
Flannels	89.30	83.30	81.00	94.50	137.50	235.00	275.00	257.50	230.00	155.00	190.00	202.50
Average	103.216	96.100	98.666	120.800	168.166	248.250	260.666	318.666	234.750	202.750	216.133	233.916
Woolen overcoatings (kerseys)	249.160	252.500	265.000	352.500	600.000	550.000	450.000	750.000	452.500	452.500	425.000	425.000
Worsted suitings:												
Serges	122.728	115.300	121.970	137.590	177.120	280.510	258.120	398.400	248.160	234.101	252.740	270.213
Clays	143.750	137.500	140.000	158.750	190.000	338.750	-------	-------	432.500	267.500	288.750	295.000
Unfinished	110.833	107.500	120.000	137.500	175.000	312.500	250.000	412.500	210.000	200.000	227.500	237.500
Vigoreux	106.875	106.000	115.000	130.000	165.000	250.000	257.500	375.000	245.000	212.500	232.500	247.500
Average	121.046	116.575	124.242	140.960	176.780	295.440	255.200	395.300	292.915	228.500	250.370	262.428
Cotton-warp serges	27.456	23.500	23.500	28.750	41.000	56.250	58.750	67.500	57.500	38.500	46.750	50.000
Summer suitings	75.000	75.000	75.000	75.000	82.500	127.500	150.000	160.000	170.000	145.000	145.000	155.000
Average, all fabrics	120.576	111.378	117.266	134.128	178.010	271.701	254.433	374.078	271.823	224.591	241.579	257.437

[1] For prices of the specific fabrics included in each class see Table 20.

NOTE.—No prices on Vigoreux were available for 1911. No quotations for clays were available for 1919 and 1920.

TABLE 22.—*Raw wools, and woolens and worsteds—Summary of average annual prices, 1911–1924*

[Source: Fairchild News Service, New York]

Year	Domestic raw wool [1]	Foreign raw wool [2]	Total fabrics [3]	Woolen suitings	Woolen overcoatings	Worsted suitings	Cotton warp serges	Summer suitings
	Cents per pound	*Cents per pound*	*Cents per yard*	*Cents per yard*	*Cents per yard*	*Cents per yard*	*Cents per yard*	*Cents per yard*
1911–1913	53.772	64.925	120.576	103.216	249.160	121.046	27.456	75.000
1914	52.733	52.383	111.378	96.100	252.500	116.575	23.500	75.000
1915	67.899	65.399	117.266	98.666	265.000	124.242	23.500	75.000
1916	77.533	79.731	134.128	120.800	352.500	140.960	28.750	75.000
1917	134.967	133.569	178.010	168.166	600.000	176.780	41.000	82.500
1918	158.124	151.884	271.701	248.250	550.000	295.440	56.250	127.500
1919	145.545	143.450	254.433	260.666	450.000	255.200	58.750	150.000
1920	123.967	127.870	374.078	318.666	750.000	395.300	67.500	160.000
1921	62.748	59.588	271.823	234.750	452.500	292.915	57.500	170.000
1922	96.924	113.338	224.591	202.750	452.500	228.500	38.500	145.000
1923	114.596	118.243	241.579	216.133	425.000	250.370	46.750	145.000
1924	119.062	131.744	257.437	233.916	425.000	262.428	50.000	155.000

[1] Prices on scoured basis. For details see Table 18.
[2] Prices on scoured basis. For details see Table 19.
[3] For details see Tables 20 and 21.

TABLE 23.—*Pile fabrics of wool, mohair, etc.*[1]*—Imports for consumption—Revenue, 1891–1926*

[Compiled according to tariff acts by U. S. Tariff Commission]

Fiscal year (unless otherwise stated)	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	Pounds				*Per cent*
1891 (Oct. 6, 1890, to June 30, 1891)	204,332	$171,890	$204,278	$0.841	118.84
1892	247,565	214,267	251,105	.865	117.19
1893	139,963	153,655	161,475	1.098	105.09
1894	54,429	59,891	62,877	1.100	104.99
1895 (July 1 to Dec. 31, 1894)	10,455	12,175	12,480	1.165	102.51
Total (1,548 days, act of 1890)	656,744	611,878	692,215	.932	113.13
Annual average (act of 1890)	154,852	144,274	163,216	.932	113.13
1895 (Jan. 1 to June 30, 1895)	103,992	102,027	50,894	.981	49.88
1896	118,821	128,637	64,312	1.083	49.99
1897	73,087	74,491	37,245	1.019	50.00
1898 (July 1 to July 24, 1897)	5,410	5,035	2,517	.931	50.00
Total (936 days, act of 1894)	301,310	310,190	154,968	1.029	49.96
Annual average (act of 1894)	117,498	120,961	60,431	1.029	49.96
1898 (July 25, 1897, to June 30, 1898)	7,914	8,451	8,052	1.068	95.28
1899	15,541	17,728	16,587	1.141	93.56
1900	15,105	18,651	16,882	1.235	90.51
1901	18,833	23,467	21,193	1.246	90.31
1902	3,651	4,391	3,943	1.203	89.78
1903	3,849	5,007	3,791	1.301	75.72
1904	4,281	4,339	4,181	1.014	96.37
1905	10,641	14,354	12,555	1.349	87.46
1906	5,308	8,638	7,084	1.627	82.01
1907	18,766	19,548	18,926	1.042	96.81
1908	52,635	60,755	56,372	1.154	92.78
1909	37,488	35,217	35,785	.939	101.61
1910 (July 1 to Aug. 5, 1909)	1,817	1,650	1,688	.908	102.30
Total (4,394 days, act of 1897)	195,829	222,196	207,039	1.135	93.18
Annual average (act of 1897)	16,267	18,457	17,198	1.135	93.18
1910 (Aug. 6, 1909, to June 30, 1910)	16,604	15,076	15,430	.908	102.35
1911	13,017	11,709	12,063	.900	103.20
1912	7,480	8,990	8,236	1.202	91.61
1913	12,601	14,158	13,301	1.124	93.95
1914 (July 1 to Dec. 31, 1913)	2,726	3,916	3,351	1.437	85.57
Total (1,609 days, act of 1909)	52,428	53,849	52,401	1.027	97.31
Annual average (act of 1909)	11,893	12,216	11,887	1.027	97.31
1914 (Jan. 1 to June 30, 1914)	247,253	275,782	122,306	1.115	44.35
1915	175,112	222,825	98,707	1.272	44.30
1916	109,371	137,051	60,950	1.253	44.47
1917	52,212	62,879	28,080	1.204	44.66
1918	13,934	19,446	8,674	1.396	44.61
1918 (July 1 to Dec. 31, 1918)	2,444	4,740	2,014	1.939	42.49
1919 (calendar year)	7,365	23,074	10,036	3.133	43.49
1920 (calendar year)	33,812	95,423	40,538	2.822	42.48
1921 (calendar year)	[2] 45,381	99,982	54,557	2.203	54.57
1922 (Jan. 1 to Sept. 21, 1922)	[3] 96,642	161,550	110,089	1.672	68.15
Total (3,186 days, act of 1913)	783,526	1,102,752	535,951	1.407	48.60
Annual average (act of 1913)	89,764	126,335	61,401	1.407	48.60
1922 (Sept. 22 to Dec. 31, 1922)	25,311	61,696	40,972	2.438	66.41
1923 (calendar year)	246,731	434,437	315,911	1.761	72.72
1924 (calendar year)	122,117	242,148	169,921	1.983	70.17
1925 (calendar year)	129,781	276,716	190,270	2.132	68.76
1926 (calendar year)	243,439	509,017	351,884	2.090	69.13

[1] Plushes, velvets, and other pile fabrics.

[2] Includes, under the emergency tariff act, 24,571 pounds, valued at $43,292, paying, on the basis of 45 cents a pound in addition to the ad valorem rates, total duty of $29,743.

[3] Includes 89,459 pounds, valued at $154,571, subject to emergency tariff act surtax of 45 cents a pound and paying total duty of $106,948.

TABLE 24.—*Manufactures of pile fabrics of wool, mohair, etc.*[1]*—Imports for consumption—Revenue, 1914–1926*

[Compiled according to tariff acts by U. S. Tariff Commission]

Fiscal year (unless otherwise stated)	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	Pounds				*Per cent*
1914 (Jan. 1 to June 30, 1914)		$36,497	$15,778		43.23
1915		72,807	31,772		43.64
1916		51,253	21,685		42.31
1917		63,623	26,396		41.49
1918		27,663	11,568		41.82
1918 (July 1 to Dec. 31, 1918)	1,123	1,504	630	$1.339	41.89
1919 (calendar year)	4,003	20,977	8,457	5.240	40.32
1920 (calendar year)		61,114	25,721		42.09
1921 (calendar year)		[2]38,156	17,869		46.83
1922 (Jan. 1 to Sept. 21, 1922)		[3]36,870	20,147		54.64
Total (3,186 days, act of 1913)		410,464	180,023		43.86
Annual average (act of 1913)		47,024	20,624		43.86
1922 (Sept. 22 to Dec. 31, 1922)	11,037	21,997	15,413	1.993	70.07
1923 (calendar year)	101,013	180,822	130,816	1.790	72.34
1924 (calendar year)	31,051	75,761	50,301	2.440	66.39
1925 (calendar year)	34,683	90,506	59,126	2.610	65.33
1926 (calendar year)	53,454	118,938	80,851	2.225	67.98

[1] Not separately recorded prior to Jan. 1, 1914.
[2] Includes, under the emergency tariff act, 3,690 pounds, valued at $12,167, paying, on the basis of 45 cents a pound in addition to the ad valorem rates, total duty of $6,626.
[3] Includes 8,609 pounds, valued at $18,105, subject to emergency tariff act surtax of 45 cents a pound and paying total duty of $11,703.

TABLE 25.—*Domestic production of wool blankets and carriage robes, 1914–1925*

Class	1925	1923	1921	1919	1914
Blankets:					
All-wool—					
Pounds	6,987,808	7,818,992	5,375,567	4,975,438	
Square yards	11,083,923	11,871,816	6,753,613	5,916,197	6,489,689
Value	$10,989,370	$9,320,873	$6,505,336	$6,897,923	$4,186,754
Cotton-mixed—					
Pounds	5,058,469	5,500,253	2,625,633	7,459,554	
Square yards	8,097,783	8,854,138	3,499,250	9,922,925	3,937,463
Value	$5,174,672	$5,286,373	$2,574,977	$8,616,905	$2,607,934
Cotton-warp—					
Pounds	9,346,463	8,186,606	6,854,942	7,603,761	
Square yards	15,070,065	12,186,706	9,295,825	9,244,134	17,973,821
Value	$7,410,534	$6,138,487	$6,072,579	$7,289,253	$3,010,070
Horse blankets:					
Pounds	1,578,780	2,497,525	2,279,625	1,664,039	
Square yards	1,409,513	2,475,356	1,942,492	1,695,715	8,164,672
Value	$786,560	$1,338,551	$1,173,058	$1,606,417	$2,017,782
Carriage robes:					
Pounds	799,622	1,128,053	388,525	1,754,951	
Square yards	500,144	535,631	268,102	1,297,439	1,768,865
Value	$668,084	$619,126	$473,386	$1,908,345	$1,233,555

TABLE 26.—*Wool blankets not over 3 yards in length—Relation of imports and exports to production in census years 1899–1925*

Census year	Value of domestic production [1]	Value of imports for consumption	Value of domestic exports [2]	Relation of imports to domestic production	Relation of exports to domestic production
				Per cent	*Per cent*
1899	$7,826,179	$15,295	([3])	0.20	
1904	9,131,988	20,269	([3])	.22	
1909	10,288,973	20,972	([3])	.20	
1914	13,056,095	67,811	([3])	.52	
1919	26,318,843	38,263	$823,544	.15	3.13
1921	16,799,336	71,930	257,041	.43	1.53
1923	22,703,410	[4]243,097	([3])	1.07	
1925	25,029,220	[4]364,979	([3])	1.46	

[1] Includes all-wool, cotton-mixed, and cotton-warp bed blankets, horse blankets, and carriage robes.
[2] Recorded as "blankets" without specification as to length.
[3] Not separately recorded.
[4] Includes carriage and automobile robes and steamer rugs made of blanketing.

TABLE 27.—*Wool blankets not over 3 yards in length* [1]*—Imports for consumption—Revenue, 1891–1926*

[Compiled according to tariff acts by U. S. Tariff Commission]

Fiscal year (unless otherwise stated)	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	Pounds				*Per cent*
1891 (Oct. 6, 1890, to June 30, 1891)	32,018	$23,439	$19,863	$0.732	84.74
1892	8,861	5,933	4,872	.670	82.12
1893	10,405	5,767	4,870	.550	84.45
1894	6,981	3,951	3,662	.570	92.68
1895 (July 1 to Dec. 1, 1894)	3,518	1,694	1,604	.482	94.69
Total (1,548 days, act of 1890)	61,783	40,784	34,871	.660	85.50
Annual average (act of 1890)	14,568	9,616	8,222	.660	85.50
1895 (Jan. 1 to June 30, 1895)	20,066	10,597	3,472	.528	32.76
1896	159,770	55,098	15,497	.345	28.13
1897	119,756	47,044	14,126	.393	30.03
1898 (July 1 to July 24, 1897)	415	238	83	.573	34.87
Total (936 days, act of 1894)	300,007	112,977	33,178	.377	29.37
Annual average (act of 1894)	116,990	44,056	12,938	.377	29.37
1898 (July 25, 1897, to June 30, 1898)	20,305	12,103	10,909	.596	90.13
1899	19,415	15,295	12,127	.788	79.29
1900	30,710	17,947	15,320	.584	85.36
1901	34,028	21,254	17,531	.625	82.48
1902	24,835	21,214	16,163	.854	76.19
1903	27,564	22,363	17,313	.811	77.42
1904	22,112	20,269	15,155	.917	74.77
1905	20,107	18,255	13,618	.908	74.60
1906	26,331	29,477	20,288	1.119	68.83
1907	29,798	30,273	21,777	1.016	71.94
1908	22,138	24,505	16,814	1.107	68.61
1909	20,878	20,972	15,047	1.005	71.75
1910 (July 1 to Aug. 5, 1909)	3,606	3,993	2,758	1.107	69.07
Total (4,394 days, act of 1897)	301,827	257,920	194,820	.855	75.53
Annual average (act of 1897)	25,072	21,425	16,183	.855	75.53
1910 (Aug. 6, 1909, to June 30, 1910)	32,958	36,494	25,209	1.107	69.08
1911	41,984	47,559	32,613	1.133	68.57
1912	42,396	46,853	32,424	1.105	69.20
1913	42,686	48,575	33,118	1.138	68.18
1914 (July 1 to Dec. 31, 1913)	25,105	25,737	16,798	1.025	65.27
Total (1,609 days, act of 1909)	185,129	205,218	140,162	1.109	68.30
Annual average (act of 1909)	41,996	46,553	31,796	1.109	68.30
1914 (Jan. 1 to June 30, 1914)	55,119	42,074	10,519	.763	25.00
1915	122,226	75,795	18,949	.620	25.00
1916	30,296	23,897	5,974	.789	25.00
1917	243,752	218,291	54,570	.896	25.00
1918	5,206,613	5,839,921	1,459,980	1.122	25.00
1918 (July 1 to Dec. 31, 1918)	201,231	230,809	57,702	1.147	25.00
1919 (calendar year)	20,350	38,263	9,566	1.880	25.00
1920 (calendar year)	75,749	140,556	35,139	1.856	25.00
1921 (calendar year)	[3] 44,964	71,930	30,506	1.600	42.41
1922 (Jan. 1 to Sept. 21, 1922)	[3] 29,714	55,426	27,217	1.865	49.11
Total (3,186 days, act of 1913)	6,030,014	6,736,962	1,710,122	1.117	25.38
Annual average (act of 1913)	690,821	771,811	195,918	1.117	25.38
1922 (Sept. 22 to Dec. 31, 1922)	37,114	52,123	30,687	1.404	57.72
1923 (calendar year)	243,585	243,097	154,866	.998	63.71
1924 (calendar year)	224,688	241,931	150,287	1.077	62.12
1925 (calendar year)	296,050	364,979	220,702	1.233	60.47
1926 (calendar year)	[4] 417,770	474,341	289,322	1.135	60.99

[1] Imports shown for the acts of 1890 and 1913 relate to "blankets" without specification as to length. Under the acts of 1894, 1897, and 1909, blankets over 3 yards in length were dutiable as cloths (see Table 15–d) and are excluded from the data here shown. Imports shown for act of 1922 relate to "blankets and similar articles of wool, including carriage and automobile robes and steamer rugs made of blanketing, not exceeding 3 yards in length."

[3] Includes, under the emergency tariff act, 27,830 pounds, valued at $44,174, paying, on the basis of 45 cents a pound in addition to 25 per cent ad valorem, total duty of $23,567.

[3] Includes 29,691 pounds, valued at $55,391, subject to emergency tariff act surtax of 45 cents a pound and paying total duty of $27,209.

[4] In addition, imports of embroidered wool blankets amounted to 159,224 pounds, valued at $45,185, dutiable at 75 per cent ad valorem.

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UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPHS 1106 AND 1107 OF THE TARIFF ACT OF 1922

AND RELATED ARTICLES IN OTHER PARAGRAPHS

TOPS AND YARNS OF WOOL OR HAIR

Paragraph 1106:
Tops and other partial manufactures.

Paragraph 1107:
Yarns.

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PREFACE

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission. These surveys have been prepared in accordance with the provisions of the tariff act in force at the time of their preparation and cover all the articles and commodities provided for in the act of 1922 and others not specially provided for.

In some cases two or more paragraphs have been combined in one survey. In doing this, industrial relationship of the articles has been kept in view. Where an article or a commodity has been treated under a preceding paragraph, reference to this fact is made. Where one grade of an article or commodity is dutiable and another grade of the same article or commodity is on the free list, the entire treatment is carried out under the dutiable paragraph.

A separate pamphlet listing the principal subjects investigated and reported upon has been published. It contains:

(1) An alphabetical index of the articles and commodities provided for in the tariff act of 1922, showing the paragraph in the act in which the article or commodity is provided for and, if discussed under a different paragraph, the number of such paragraph.

(2) The number of the survey in which the article or commodity is discussed.

Special and miscellaneous reports, which are unnumbered, are also included in the index.

Thus, by use of the index, the exact location of the survey or report relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Walter S. Lewis of the textile division of the commission's staff, and of others.

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TOPS AND YARNS OF WOOL OR HAIR

SUMMARY

TARIFF ACT OF SEPTEMBER 21, 1922

[Text of Schedule 11 providing for partial manufactures and for yarns of wool or hair]

PAR. 1106. Wool, and hair of the kinds provided for in this schedule, which have been advanced in any manner or by any process of manufacture beyond the washed or scoured condition, including tops, but not further advanced than roving, 33 cents per pound and 20 per centum ad valorem.

PAR. 1107. Yarn, made wholly or in chief value of wool, valued at not more than 30 cents per pound, 24 cents per pound and 30 per centum ad valorem; valued at more than 30 cents but not more than $1 per pound, 36 cents per pound and 35 per centum ad valorem; valued at more than $1 per pound, 36 cents per pound and 40 per centum ad valorem.

1. TOPS AND OTHER PARTIAL MANUFACTURES OF WOOL, MOHAIR, ALPACA, ETC.

Paragraph 1106 includes all partial manufactures of wool or hair, advanced beyond the raw material stage but not yet spun into yarn. Imports under this heading consist mainly of combed wool, known as "tops," to be spun into worsted yarn.

Of the important top-producing countries, the United Kingdom ranks first, the United States second, Germany third, and France fourth. Tops imported into the United States are largely from the United Kingdom; in 1924 France ranked second as a source of supply and was followed by Canada and Australia.

Prior to 1894 tops and other partial manufactures of wool were not mentioned in import statistics. Under the acts of 1894, 1897, and 1909 partial manufactures of wool or hair were listed in import statistics as one inclusive total, the wording under the act of 1894 being "roving, roping, or tops," and under the acts of 1897 and 1909 "wool or hair advanced in any manner or by any process of manufacture beyond the washed or scoured condition, n. s. p. f."[1] Under the act of 1913 imports of partial manufactures of wool or hair were recorded under four headings, as follows: "Tops of wool or camel's hair"; "Tops of mohair, alpaca, etc."; "Roving or roping"; and "Wool or hair advanced in any manner, or by any process of manufacture, beyond the washed or scoured condition, n. s. p. f." Under the act of 1922 imports of partial manufactures of wool or hair are recorded under the heading: "Wool or hair advanced in any manner or by any process of manufacture beyond the washed or scoured condition, including tops, but not further advanced than roving, n. s. p. f.," subdivided into those of mohair and those of wool or other hair.

[1] N. s. p. f.—not specifically provided for.

Wide fluctuations have occurred in imports of tops and other partial manufactures of wool and hair, largely because of changes in the rates of duty but also in certain periods because of other factors, such as the demand during the World War. The status of this import trade under four tariff acts may be summarized as follows:

Tops and other partial manufactures of wool, mohair, alpaca, etc.—Imports for consumption—Totals by tariff acts, 1894–1913

Tariff act	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate	Equivalent specific rate
	Pounds				*Per cent*	*Per pound*
Act of 1894 (936 days)	9,223,789	$3,053,565	$610,713	$0.302	20.00	$0.066
Act of 1897 (4,394 days)	17,262	14,577	14,748	.844	101.17	.854
Act of 1909 (1,609 days)	8,178	4,351	4,540	.532	104.34	.555
Act of 1913 (3,186 days)	26,816,997	17,668,535	2,022,117	.659	11.44	.754

Reducing the above figures to annual averages, comparisons may be made with the calendar years 1923 and 1924 under the act of 1922, as follows:

Tops and other partial manufactures of wool, mohair, alpaca, etc.—Imports for consumption—Average per year of 365 days, acts of 1894–1922

Tariff act	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate	Equivalent specific rate
	Pounds				*Per cent*	*Per pound*
Act of 1894	3,596,884	$1,190,760	$238,152	$0.302	20.00	$0.066
Act of 1897	1,434	1,211	1,225	.844	101.17	.854
Act of 1909	1,855	987	1,030	.532	104.34	.555
Act of 1913	3,072,255	2,024,173	231,661	.659	11.44	.754
Act of 1922:						
Calendar year 1923	3,980,450	2,426,718	1,798,892	.610	74.13	.452
Calendar year 1924	576,096	429,126	275,937	.683	68.76	.479

The average annual imports of 3,072,255 pounds under the act of 1913 consisted of 180,705 pounds of mohair, alpaca, etc., and 2,891,550 of wool or camel's hair. Of the 3,980,450 pounds imported in 1923, 48,216 were of mohair and 3,932,234 of wool or other hair; and of the 576,096 pounds imported in 1924, 26,591 were of mohair, and 549,505 of wool or other hair. The main counts of tops imported in 1923 were, in order of importance, as follows: 48s, 50s, 56s, 58s, 60s, 64s, 70s, 80s, 46s, and 44s.

The domestic production of tops in 1923 is estimated to have been about 200,000,000 pounds, so that imports in that year were probably around 2 per cent of production. Exports have always been exceedingly small.

2. Yarns of Wool, Mohair, Alpaca, etc.

Paragraph 1107 covers all yarns made of wool or hair. Imports are supplied mainly by the United Kingdom; smaller amounts come

from France, Germany, and Belgium. The status of this import trade under five tariff acts may be summarized as follows:

Yarns of wool, mohair, alpaca, etc.—Imports for consumption—Totals by tariff acts, 1890–1913

Tariff act	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate	Equivalent specific rate
	Pounds				*Per cent*	*Per pound*
Act of 1890 (1,548 days)	3,659,283	$2,236,311	$2,350,525	$0.611	105.11	$0.642
Act of 1894 (936 days)	6,563,156	3,187,414	1,214,198	.486	38.09	.185
Act of 1897 (4,394 days)	2,877,194	1,897,485	1,774,926	.659	93.54	.617
Act of 1909 (1,609 days)	868,500	723,568	623,172	.833	86.12	.718
Act of 1913 (3,186 days)	21,062,619	26,125,637	7,233,036	1.240	27.69	.343

The above figures, reduced to a uniform basis, the year of 365 days, may be compared with imports in the calendar years 1923 and 1924 under the act of 1922.

Yarns of wool, mohair, alpaca, etc.—Imports for consumption—Average per year of 365 days, acts of 1890–1922

Tariff act	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate	Equivalent specific rate
	Pounds				*Per cent*	*Per pound*
Act of 1890	862,815	$527,296	$554,226	$0.611	105.11	$0.642
Act of 1894	2,559,350	1,242,955	473,485	.486	38.09	.185
Act of 1897	239,002	157,620	147,439	.659	93.54	.617
Act of 1909	197,018	164,141	141,366	.833	86.12	.718
Act of 1913	2,413,012	2,993,050	828,643	1.240	27.69	.343
Act of 1922:						
Calendar year 1923	5,617,321	7,238,370	4,873,992	1.289	67.34	.868
Calendar year 1924	3,120,690	4,416,431	2,880,085	1.415	65.21	.923

The average annual imports of 2,413,012 pounds under the act of 1913 consisted of 549,839 pounds of mohair, alpaca, etc., and 1,863,173 of wool. Of the 5,617,321 pounds imported in the calendar year 1923, 2,567,270 were of mohair and 3,050,051 of wool or other hair; and of the 3,120,690 pounds imported in 1924, 1,355,400 were of mohair, and 1,765,290 of wool or other hair. Imports of woolen yarns are very small, the great bulk of yarns coming in being worsted. The leading numbers imported are probably 1/21s, 2/20s, 2/48s, and 2/70s of wool, and 2/28s and 2/32s of mohair.

The domestic production of yarns of wool, mohair, alpaca, etc., in 1923 was estimated at about 400,000,000 pounds, of which about 215,000,000 pounds were woolen and 185,000,000 pounds worsted Imports in 1923 were, therefore, in weight about 1½ per cent of the total production, or about 3 per cent of the worsted production. Exports of domestic yarns have been negligible.

SECTION 1

TOPS AND OTHER PARTIAL MANUFACTURES OF WOOL, MOHAIR, ALPACA, ETC.

General Information

Tariff Act of September 21, 1922

Par. 1106. Wool, and hair of the kinds provided for in this schedule, which has been advanced in any manner or by any process of manufacture beyond the washed or scoured condition, including tops, but not further advanced than roving, 33 cents per pound and 20 per centum ad valorem.

DOMESTIC PRODUCTION

Paragraph 1106 covers all partial manufactures of wool or hair advanced beyond the raw-material stage but not yet spun into yarn. It includes laps and sliver from the preparing machines, sliver from the worsted cards and can gill boxes, tops from the worsted comb, sliver from spindle gill boxes, sliver or drawing from draw frames, slubbing from slubbers, roving from worsted speeders, and laps and roving from woolen cards. It also includes dyed wool or hair. Combed wool or tops, used in the manufacture of worsted yarns, is the only article of commercial importance; the other partial manufactures are rarely bought or sold, being utilized in the mills where produced.

Raw materials and sources.—The raw materials of the wool-manufacturing industry are the wool of the sheep and the hair of the camel, Angora goat, Cashmere goat, alpaca, and other like animals. Of wool, the United States produces about half of its requirements; the main sources of importation in 1923 were South America, the United Kingdom, Australia, South Africa, and New Zealand. Of mohair, the United States produced about 60 per cent of its requirements; imports are mainly from England, Turkey, and South Africa. The other fibers mentioned are entirely of foreign origin. Camel's hair was imported mainly from China and Russia, Cashmere goat hair from England and China, and alpaca and vicuna from Peru.

Equipment.—Although various machines are used in the manufacture of the articles included under paragraph 1106, the most distinctive are the cards and the combs. The census shows the following data:

Table 1.—*Total number of cards and combs on wool in the United States, 1899–1925*

Year	Woolen cards [1]	Worsted cards	Worsted combs	Year	Woolen cards [1]	Worsted cards	Worsted combs
	Sets				*Sets*		
1899	6,605	(2)	1,451	1914	5,382	2,153	2,425
1904	6,142	(2)	1,549	1919	5,835	2,143	2,294
1909	5,555	(2)	2,120	1925 (May) [3]	7,081	(2)	2,714

[1] Includes shoddy cards.
[2] Not reported.
[3] Based on reports received by the Bureau of the Census from 951 manufacturers, operating 1,112 mills. This is exclusive of 11 manufacturers operating 16 mills, who failed to report for the month of May; these mills had about 125 sets of woolen cards and 14 worsted combs.

Of the 1,451 wool-combing machines used in 1899, 76.8 per cent were of foreign manufacture; of the 2,294 combs used in 1919, ~~76.8~~ 67.8 per cent were of foreign manufacture. Information is not available as to the proportion of domestic and foreign-made combing machines used in 1925.

Preliminary treatment of raw fibers.—As the original wool or hair fibers pass through many processes before reaching the condition of the materials described in paragraph 1106, the manner in which the original fibers are commonly handled and manipulated will be briefly outlined.

Wool fleeces are usually baled and shipped as sheared from the sheep; that is, "in the grease," without being washed or scoured. On receipt at the mill they are first sorted into grades, according to length, fineness, elasticity, and strength. Although it is customary to divide a fleece into 5 to 7 grades, the wool from a single sheep is sometimes sorted into as many as 13 or 14 grades. Hair of the Angora goat, the Cashmere goat, the alpaca, and like animals is sorted in a way similar to that of wool. Sorting or grading are necessary processes because wool varies widely in quality with the breed of the animal and the part of the body from which it is taken. It is clear, therefore, that any attempt to utilize the total clip from one animal as a homogenous mass would be uneconomical. In general, the long-staple fibers are used in worsted manufacturing, while the short-staple fibers are employed in woolen manufacturing. There are, however, other essential differences between woolen and worsted manufacturing besides length of staple. For instance, it is possible to use one-half of a bag of wool for making woolen yarn and the other half for worsted yarn.

The difference between these two types of yarns is largely brought about by the different kinds of machinery employed in the woolen and worsted industries. Wool and hair fibers contain varying degrees of grease and dirt, and if a large quantity of foreign matter is present they must be put through a machine which mechanically removes much of the dirt, straw, and other extraneous matter. If the raw fibers are in a fairly clean condition, this dusting or cleaning is omitted. When fibers are washed, scoured, or otherwise freed from grease and other foreign substances, the resulting product is known as scoured wool or hair.

Some wools and hair contain vegetable impurities even after being scoured, and these are removed by carbonizing. The vegetable matter is disintegrated by this process, and subsequent washing, heating, drying, and dusting reduce it to powder, leaving the wool in a thoroughly clean condition known as carbonized wool. The carbonizing of scoured wool is usually carried out only when the fiber is to be used for woolen yarns, because in the production of worsted yarns the vegetable impurities are nearly all removed in the carding and combing processes.

The various stages through which the wool and hair fibers must pass from their original state and up to the time they are ready to be spun into yarn are presented graphically in Chart A.

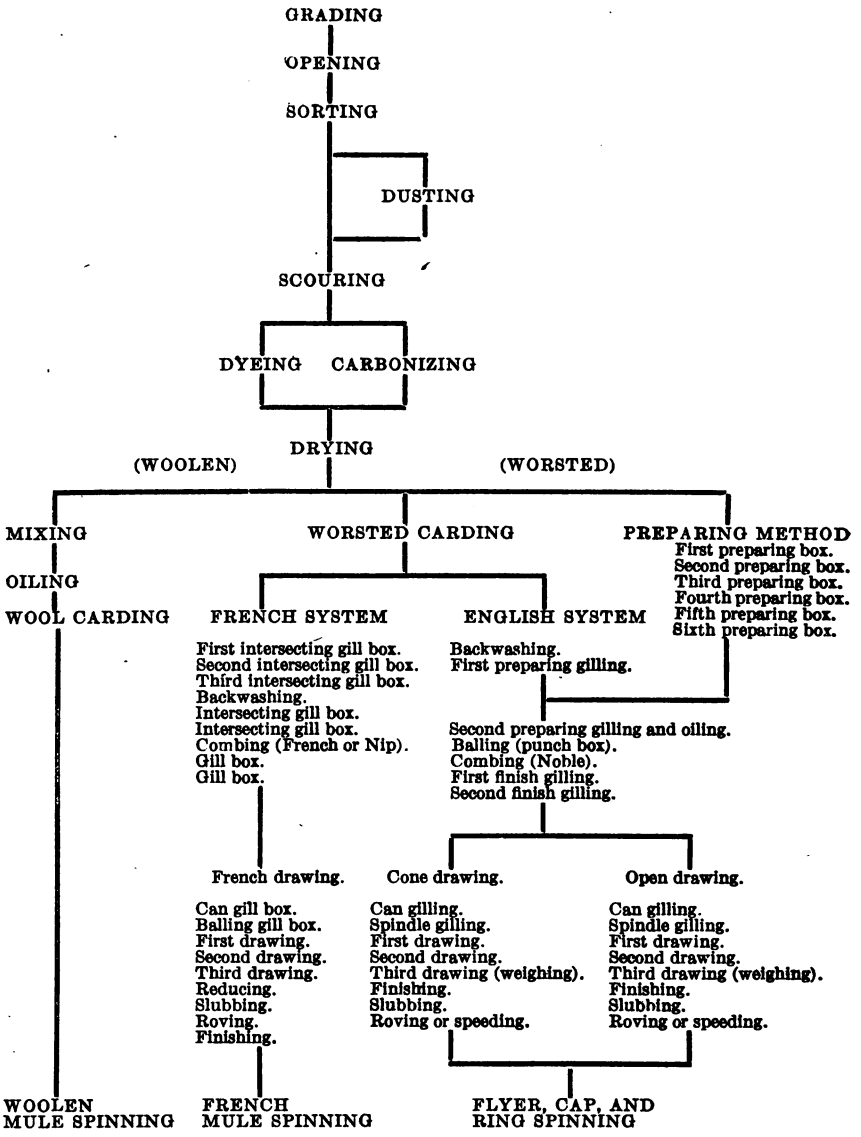

CHART A.—Sequence of processes in the manufacture of woolen and worsted yarns, as published in Bulletin No. 238, June, 1918, of the U. S. Bureau of Labor Statistics.

Methods of production.—Methods of production vary according to the type of material used and the kind of product desired.

As shown in the above chart, the production of woolen yarn requires few processes, whereas that of worsted yarn requires many processes and may employ various systems of manufacture.

In woolen manufacturing, the scoured wool, which may or may not have been carbonized, is too dry to be properly worked, and it is sprinkled with oil or oil emulsion. This lubricates the fibers, and the uniform penetration of the oil results in reduced waste and a more

workable material for later machine processes. The clean, oiled wool is put through a machine called a mixing picker, which separates the larger masses of fiber, thoroughly mixes them, effects a more thorough distribution of the oil, and finally produces a relatively loose mass of separated fibers. The wool is then carded. The primary object of carding is (1) to remove as far as possible all knots, seeds, and burrs, (2) to separate one fiber from another, and (3) to arrange the fibers into a continuous strand, all parts of which are uniform in structure and weight.

Carding causes the fibers to be brushed out into a thin sheet, which in turn is condensed into a round, soft, fuzzy strand known as roving or roping. No attempt is made to parallel the fibers which are of different lengths. The woolen "roving" (really sliver since it contains no twist) thus formed is wound on long spools or bobbins and is then ready to be spun into woolen yarn. Woolen roving is seldom bought or sold as an article of commerce, because it is commonly used as one of the products in the continuous operations of woolen manufacturing.

In worsted manufacturing it is customary to subject the scoured wool to both carding and combing. Long wools are generally put through preparing machines which open up the wool fibers, separate and lay them parallel or nearly so, and by drawing the fibers out into a sliver, put them into a fit condition for combing. Medium-length wools are usually passed through the worsted card;[2] the sliver therefrom is backwashed and drawn out by gill boxes before being combed. Shorter wools are, as a rule, treated by the so-called French system, which prepares the fiber in a manner similar to that described for medium wools. The first two methods are commonly known as the English system.

Combing, the next major machine process in preparing the fiber for spinning, arranges the fibers in a parallel position and removes a certain percentage of the shorter fibers (noil) and any foreign matter. If the fiber is oiled before being combed, the result is oil top, but if it is combed without oil it is known as dry top. The operation of combing is very complicated and requires highly specialized machinery. The leading wool combs are known as (1) Noble, (2) Holden, (3) Lister, and (4) French or Heilman. The Noble comb is most widely used in the United States because of its adaptability to the wools consumed in this country; the French comb, practically the only other kind employed, is particularly suitable for short wools, and is also extensively adopted for soft yarns for knit and dress goods. It is estimated that 75 per cent of the combs used in this country are of the Noble type and 25 per cent are French. The latter, however, is said to be gaining in favor over the former. The Noble comb predominates in the United Kingdom, although the Lister and the French comb are much used; Germany uses almost wholly the French comb; and France the French, the Noble, and the Holden.

There is considerable diversity in the types of combs used abroad, and the rate of production varies with each type, but the basic principle is the same in all. Several strands of slivers are run together into

[2] The worsted card differs from the woolen in construction and in combination of parts, but the operation is similar in principle in the two types of machines.

the combing machine, and the product is a continuous untwisted strand of parallel fibers. The combed sliver is known as tops.

In French combing a much shorter staple can be used than is required in English combing. This difference is illustrated by Table 2.

TABLE 2.—*Length of fiber required for combing*

	French combing	English combing
(a) Fine wools	1¼ to 2 inches	Over 2 inches.
(b) Medium wools	1½ to 2¼ inches	Over 2¼ inches.
(c) Coarse wools	2 to 3 inches	Over 3 inches.

The two systems of drawing in general use—the English and the French—are in principle the same. More processes, however, are required by the French system and the product has no twist; by the English or Bradford system some twist is imparted. Most fine wools are combed by the Bradford system, although large quantities are put through French combs. The proportion combed by the French system depends to a considerable extent on where the wool was grown, as climatic conditions affect the length and soundness of the fiber.

After combing, the top is subjected to a drawing process, the object of which is to straighten the fibers, reduce the size of the combed sliver, render it more nearly uniform, and make it ready for spinning. To obtain the top desired, it is customary to put the combed sliver through gill boxes once more; that is, a number of these slivers are passed through each gill box and drawn out into one strand. The strand thus produced is coiled into flat-end balls (tops) of equal weight, and in this shape is ready for shipment or for further manufacture in the mill where made. Many machines are required to obtain this result, the number varying according to the character of the wool and the kind of yarn to be produced.

Classification of tops.—The classification of tops made for sale is based on the quality of the wool from which it is combed. This quality represents fineness, soundness, and length of staple, but neither in this country nor abroad have grades or standards been fixed or codified by any public or official body.[3] Nevertheless, by force of custom, the variation in standards among top makers is not great, for there is a fairly close agreement among producers and traders as to what a top of a specified grade should be.

The quality of any given type of wool may vary widely, depending upon the breeding and the physical condition of the sheep, the locality in which it is raised, the weather, and many other variable factors. These various conditions, of course, affect the character of the top, which will correspond in quality to the raw wool from which it is produced. However, the relation between the count of the top and the count or fineness of the yarn which may be spun from it is not so close. Thus, yarn produced from tops coarser than 64s is rarely as

[3] For some time, however, the United States Department of Agriculture has been endeavoring to establish standard lengths of staple for the classification of raw wool grades according to the usual commercial divisions. This work has been carried on in cooperation with producers and manufacturers of wool in this country and abroad.

fine as the tops, whereas yarns from 64s and finer tops may be spun to the same or sometimes to an even greater degree of fineness.

The following table shows the grades of raw wool employed in the United States and the grades of tops that are usually produced from these wools.

TABLE 3.—*Tops produced from various grades of wool*

United States raw-wool grades	Tops produced	United States raw-wool grades	Tops produced
Fine	64s to 66s	High ¼ blood	50s
Half blood	60s to 64s	Average ¼ blood	48s
High ⅜ blood	58s	Low ¼ blood	44s
Average ⅜ blood	56s	Common	40s
Low ⅜ blood	52s to 56s	Braid	36s

Organization.—Partial manufactures of wool or hair are incidental and preliminary to the manufacture of yarns, and, with the exception of tops, they are seldom articles of commerce. In the development of the trade in tops in the last 30 years, a type of organization known as commission combing has grown into a large branch of the worsted industry. This specialized industry had long been common in England and Europe, but it was not until the late nineties that it was established in the United States. To-day there are 10 or 12 mills whose sole business is commission combing, and there are several others that combine commission combing with other manufacturing activities. While the bulk of the tops turned out for sale are probably produced by commission combers, large quantities are sold by mills producing other goods, and there are mills that sell tops as a side issue in order to keep their combing machinery occupied and to take advantage of a good market, or for some other purpose.

Prior to 1894, imports of tops were not separately recorded but were probably very small. During the years 1894–1897, under the tariff act of 1894, importations of tops were large, and in 1897 exceeded 5,000,000 pounds. Owing to this, certain worsted manufacturers became accustomed to purchasing tops, and a market for them was established. After the passage of the higher tariff act of 1897 imports almost entirely ceased, and this created an opportunity for the development of the new industry of producing tops. Their manufacture for sale in this country gradually increased, and as the consumption of worsted cloths became greater, top making began to branch off as an independent industry. This trend of business brings the industry more into line with the long-established method followed in England and Europe.

From recent observation it appears that, of the total quantity of tops purchased in the market, the proportion sold by worsted manufacturers as an individual product has decreased and that the larger part of the demand is now supplied by specialized top makers.

Geographical distribution.—No statistics are available to show the domestic production of tops and other partial manufactures of wool and hair, but as tops are the product of the combing machine, the number of such machines, which is reported by the Department of Commerce to be 2,714 installed in 1,112 mills in the United States in

May, 1925, gives a fair indication of their productive capacity. Table 4 shows the distribution of these machines, by States, for census years since 1889.

TABLE 4.—*Total wool-combing machines, 1889–1919*

State	1889	1899	1904	1909	1914	1919
Massachusetts	265	424	497	703	918	862
Rhode Island	193	287	291	461	522	385
New Jersey	29	128	169	268	349	368
Pennsylvania	188	357	377	354	320	343
New York	84	116	74	141	143	157
New Hampshire	29	34	24	52	52	52
Connecticut	27	57	37	52	29	21
Maine	5	19	26	29	32	41
Wisconsin			8	13	11	11
All other	19	29	46	47	49	54
Total	839	1,451	1,549	2,120	2,425	2,294

For 1919 the census reported that approximately 38 per cent of all combing machines were in Massachusetts. 17 per cent in Rhode Island, 16 per cent in New Jersey, 15 per cent in Pennsylvania, 7 per cent in New York, less than 2.5 per cent in New Hampshire. Of the remainder, some were installed in mills in Maine, Vermont, and Connecticut, some in the Middle West, and a few in the Southern States. The northeastern States, therefore, predominate in the manufacture of tops, and Massachusetts far exceeds all other States.

Domestic production and consumption.—Domestic production can not be stated, except for tops, which probably average above 200,000,000 pounds per year. Of this quantity the greater portion is made from the wool of the sheep by mills which take the raw wool and work it into a form more advanced than tops.

Thirty years ago tops were negligible as an article of trade and commerce, because each mill carried through the whole manufacuring process, from the wool in the grease to yarn or cloth. In recent years, however, tops have become more and more important in domestic commerce. In 1899 wool manufacturers purchased 5,865,566 pounds of tops in the market; in 1909 purchases had increased to 21,103,510 pounds, valued at $14,755,409; in 1914 to 29,177,790 pounds, valued at $16,717,322; and in 1919 to 26,466,973 pounds, valued at $45,621,904.

The amounts purchased in 1899 and 1909 were almost entirely of domestic production, as imports were negligible. In the calendar year 1914, when the purchase of tops amounted to 29,177,790 pounds, imports for consumption were 6,145,608 pounds; in 1919, tops purchased totaled 26,466,973 pounds, while imports amounted to only 731,955 pounds. There are no available statistics as to the quantity of tops purchased in 1923, but importations probably exceeded 3,750,000 pounds, in as much as tops combined with other partial manufactures, which are included in paragraph 1106, amounted to 3,980,450 pounds.

The domestic trade in wool tops extends to all qualities. Tops of mohair, alpaca, etc., are articles of commerce to a limited extent, but trade in the open market is small compared with the quantity produced by mills for their own use. The annual imports for the years 1914–1922 averaged about 180,000 pounds.

Domestic exports.—Export statistics were first recorded in 1922, when shipments of domestic-made tops amounted to 42,003 pounds, valued at $26,794, the entire quantity going to Canada. Also during that year, 66,262 pounds of foreign tops were exported, of which Canada took 62,154 pounds. Exports of domestic tops were not specifically recorded in our statistics in 1923 and 1924, but exports of foreign-made tops in those years were 335,007 pounds and 662,528 pounds, respectively. Official reports of Canada, however, show importations from the United States as follows:

TABLE 5.—*Wool tops—Canadian imports from United States,*[1] *1918–1925*

Fiscal year (ended Mar. 31)—	Pounds	Value	Fiscal year (ended Mar. 31)—	Pounds	Value
1918	(2)	$4,496	1922	337,691	$161,166
1919	None.	None.	1923	270,812	215,912
1920	(2)	3,170	1924	267,791	239,366
1921	442,366	454,389	1925	253,203	321,151

[1] Tops were not separately listed in Canadian import statistics prior to the fiscal year 1918.
[2] Not shown.

Total imports of worsted tops into Canada for 1925 amounted to 5,164,151 pounds, valued at $3,550,542, the United Kingdom furnishing the bulk.

Commission charges for combing.—Table 6 compares American and English commission rates for combing, including profit. The English rates, converted into United States currency as of June 2, 1924 (at £1 = $4.3076), are of the same date as the American rates and therefore the two are comparable.[4]

TABLE 6.—*Commission charges for wool combing in England and the United States in 1924* [1]

[Charges in cents per pound]

Type of wool and proportion of top to noil	English rate	American rate	Type of wool and proportion of top to noil	English rate	American rate
Merinos, tearing 5 to 1 and over	$0.103	$0.17	50s, 5 and under 7 to 1	$0.088	$0.145
Merinos, 4 and under 5 to 1	.112	.18	40s, 8 to 1 and over	.072	.105
Merinos, 3 and under 4 to 1	.121	.19	40s, 6 and under 8 to 1	.081	.11
56s, 7 to 1 and over	.088	.155	Preparing, 32s to 36s	.063	.09
56s, 5 and under 7 to 1	.097	.16	Average	.0904	.1445
50s, 7 to 1 and over	.079	.14			

[1] Rates include no charge for the raw material or the cost of holding such material during the manufacturing operations.

NOTE.—The word "tearing" means the proportion of top to noil; thus 5 to 1 means five parts of top to one of noil.

Figures in the above table show that the English rates averaged 5.4 cents per pound, or 37½ per cent lower than the average American rates.

By-products in top manufacture.—Under normal conditions, between 80 and 90 pounds of tops are produced from 100 pounds of scoured wool. If the output of tops is less than 80 per cent, either the scoured wool used is inferior or the method applied is unusual. An output of more than 90 per cent indicates not only a very superior

[4] In the appendix will be found a table of combing charges in England and the United States for 1914 and for several years since the war.

grade of wool, but greater skill and efficiency in manufacture. According to the Tariff Board report of 1912, the average yield was approximately 85 pounds of tops from 100 pounds of scoured wool. The most important by-product in the manufacture of tops is the noil; card waste and other wastes accumulating from the various machines employed are less valuable. Of the total weight of noils and wastes, noils constitute from 60 to 90 per cent, according to the quality of wool used and the manufacturing process employed in top making. The value of each type varies greatly, depending not only on differences in quality but very largely on whether the consuming public requires woolen or worsted materials. If woolens are most in demand, noils (which are a by-product of the worsted industry and a valuable raw material in the manufacture of woolen goods) bring a higher market price because worsted manufacturing is reduced, with the result that noils are produced in smaller quantities and consumed in larger amounts. In 1920, when worsted goods were in great demand, noils were selling for 28 to 55 cents per pound; whereas in 1924, when woolen goods were popular, noils were selling at from 80 cents to $1.15 per pound. Of course, many other factors influence the market price of noils, namely, periods of depression or prosperity, style of clothing, raw-wool production and prices, and the effect of the tariff on imports.

Foreign Production

In England and in continental Europe the production of tops is ordinarily carried on in establishments designed for the purpose, and as a result the trade in tops is much more extensive abroad than in the United States. The chief top markets, having established exchanges for dealing in tops, are Bradford, England; Roubaix, France; Antwerp, Belgium; and Leipzig, Germany.

Although no statistics showing the actual production of tops in the principal foreign countries are available, the number of combing machines afford a fair basis of comparison. For these the most recent available data are given in Table 7.

Table 7.—*Wool-combing machines in principal foreign countries*

Country	Year	Number of combing machines
United Kingdom	1918	2,952
Germany	1907	2,119
France	1922	1,757
Italy	1924	500
Belgium	1924	340
Japan	1924	500

Note.—The Census Bureau reported 2,714 wool-combing machines in the United States in May, 1925.

The foreign countries of greatest importance in the manufacture of tops are the United Kingdom, Germany, France, Belgium, and Italy. The United Kingdom leads in exports and is usually considered the largest producer. English authorities estimate the yearly production of the United Kingdom at between 250,000,000 and 300,000,000 pounds, of Germany at 175,000,000 pounds, and of France at 130,000,000 pounds. Official figures on the international trade of the three leading European countries and of the United States are shown in Table 8.

TABLE 8.—*Wool tops—General imports and exports, 1909–1924*

[Quantity in pounds]

	United States	United Kingdom	Germany	France
1909:				
Imports	[1] 2,248	[2]	49,523,253	572,535
Exports	[2]	40,676,500	21,438,192	63,993,365
1913:				
Imports	[1] 527	[2]	39,968,296	3,583,577
Exports	[2]	43,633,100	23,659,416	50,087,850
1922:				
Imports	4,707,892	4,550,100	17,990,638	6,347,043
Exports	108,265	41,603,500	2,571,005	52,676,730
1923				
Imports	3,904,578	5,779,200	12,786,239	1,392,425
Exports	[2]	38,995,200	17,131,947	39,906,347
1924:				
Imports	428,718	4,759,200	15,917,212	2,041,681
Exports	[2]	41,228,900	14,175,578	40,906,133

[1] Includes tops and other partial manufactures of wool or hair.
[2] Not recorded but probably negligible.
[3] Statistics not recorded. Canadian statistics show that 270,812 pounds were imported from the United States for the year ended Mar. 31, 1923; and 267,791 for the year 1924.

In Japan, wool manufacturing is expanding much more rapidly than the production (growing) of wool. This has been brought about by the increasing use of wool wearing apparel by the Japanese people and by the fact that the production of raw wool is small because of the limited acreage upon which to raise sheep. Therefore, to keep her weaving mills running, Japan must import either the necessary raw wool or wool products such as tops and yarns. Imports of wool tops are shown in the following table:

TABLE 9.—*Wool tops—Imports by Japan, 1914–1923*

Year	Pounds	Year	Pounds
1914	8,131,369	1919	4,285,510
1915	5,141,439	1920	3,784,180
1916	5,930,778	1921	5,473,093
1917	5,721,377	1922	7,835,000
1918	3,370,815	1923	10,361,000

The production of tops in Japan was not recorded prior to 1916, when it amounted to 7,706,000 pounds; in 1920 it increased to 12,530,000 pounds, and in 1923 to 18,659,032 pounds.

IMPORTS

Imports of partial manufactures of wool were not separately recorded prior to the act of 1894, when figures were given for inclusive imports of "roving, roping, or tops." In the tariff act of 1894 all kinds of tops, roving, and other partial manufactures of wool, mohair, etc., were grouped together in imports for consumption statistics. The largest yearly importation during the period of this act was in the fiscal year 1897, when 5,662,953 pounds, valued at $1,821,405, were recorded.

During the life of the tariff acts of 1897 and 1909, a period covering nearly 16½ years, imports of tops, etc., were negligible, the highest recorded for any one year being $1,690 in 1904.

The tariff act of 1913 classified tops into two general groups—(1) tops made from wool or camel's hair and (2) tops made from the

hair of the Angora goat, alpaca, and other like animals, and fixed the duties on these two groups at 8 and 20 per cent, respectively. The equivalent ad valorem rate of duty dropped from 108.54 per cent, which was the rate for the last six months of the act of 1909 with wool dutiable, to 8.09 per cent for the first six months under the act of 1913 with wool on the free list. Importations of tops immediately increased, amounting to $1,464,643 out of a total of $1,490,097 reported as the value of tops and other partial manufactures imported in the first six months of 1914. (See Tables 10, 10A, and 10B.) The corresponding figures for the fiscal year 1915 were $1,796,580 and $1,800,486, respectively. Under the act of 1913 statistics were also given separately for imports of roving or roping and for all other partially manufactured wool or hair not specially provided for. Figures for these two classifications are shown in Tables 10C and 10D, the rate of duty being 8 per cent for each division.

Owing to the war, imports showed a heavy falling off in 1916 and up to the year 1919 they continued to be relatively small. It is of interest to note that in the years 1916 and 1917 tops made of the hair of the Angora goat, alpaca, or like animals, were imported in larger quantity than tops made from wool or camel's hair. The World War caused a change in the character of the tops imported, and, as shown in Table 10, imports decreased to a low point during this period. They were least in the fiscal year 1917, when their total value was $75,197.

Directly after the war, imports of partial manufactures of wool or hair, mainly tops, began to increase. Imports in 1919 were valued at $848,675 and in 1920 at $1,348,276, while in 1921 they attained the record of 15,389,644 pounds, valued at $10,298,562. Of the 1921 import tops alone totaled 15,180,960 pounds, valued at $10,095,185. This extraordinary increase may be attributed to the anticipation of higher duties, greater domestic consumption, and surplus stocks in foreign countries. Statistics also show that 14,872,136 pounds of tops, valued at $9,927,878, were imported between January 1 and May 28, 1921, the latter date being the day that the emergency tariff act became effective. This temporary law (the emergency tariff act) imposed a specific duty of 45 cents a pound in addition to the ad valorem duties of the previous act. Although the higher equivalent ad valorem rate of duty immediately reduced imports, nevertheless considerable quantities continued to come in. The act was in operation from May 28, 1921, to September 21, 1922 (482 days), during which time importations amounted to 1,100,203 pounds, valued at $1,065,275. Tops alone constituted 1,099,498 pounds, having a value of $1,063,693. The higher rates of duty are particularly reflected in the increased equivalent ad valorem rate during the period January 1 to September 21, 1922, as shown in Table 10.

In the present tariff act, which became effective on September 22, 1922, tops, roving, roping, etc., are classified together. The rates of duties provided under this act seem to have had little influence on imports in 1923, for in that year they amounted to 3,980,450 pounds, valued at $2,426,718, and the equivalent ad valorem rate was 74.13 per cent. Official import figures for 1923 do not separate tops from the other partial manufactures, but it may be assumed that at least 3,750,000 pounds of tops were imported during that year. However,

in 1924 the decrease in imports as compared with those of 1923 was marked, for only 576,096 pounds came in, having a value of $429,126, with an equivalent ad valorem rate of 68.76 per cent. Of the total quantity imported in 1924, less than 5 per cent was of mohair, the bulk being listed as made of wool or other hair.

Imports for consumption.—Table 10 is a summary of the total imports for consumption, of partial manufactures of wool or hair, beginning with the act of 1894. Subsidiary Tables 10A, 10B, 10C, and 10D show, respectively, imports of tops of wool or camel's hair, tops of mohair, alpaca, etc., roving or roping, and partially manufactured wool or hair, n. s. p. f., for periods during which these were separately recorded.

TABLE 10.—*Total tops, roving, and other partial manufactures of wool, mohair, alpaca, etc.*[1]*—Imports for consumption—Revenue, 1895–1924*

Fiscal year (unless otherwise stated)	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	Pounds				*Per cent*
1895 (Jan. 1 to June 30)	1,567,372	$501,344	$100,269	$0.320	20.00
1896	1,147,461	438,417	87,683	.382	20.00
1897	5,662,953	1,821,405	364,281	.322	20.00
1898 (July 1 to July 24, 1897)	846,003	292,399	58,480	.346	20.00
Total (936 days, act of 1894)	9,223,789	3,053,565	610,713	.302	20.00
Annual average (act of 1894)	3,596,884	1,190,760	238,152	.302	20.00
1898 (July 25, 1897, to June 30, 1898)	1,229	837	979	.681	116.97
1899	3,607	3,345	3,276	.927	97.94
1900	858	1,056	956	1.231	90.53
1901	821	878	801	1.069	81.23
1902	880	965	895	1.097	92.75
1903	321	395	359	1.231	90.89
1904	3,287	1,690	2,046	.514	121.07
1905	1,571	1,439	1,479	.916	102.78
1906	955	1,129	991	1.182	87.78
1907	850	964	904	1.134	93.78
1908	402	708	566	1.761	79.94
1909	2,248	879	1,244	.391	141.52
1910 (July 1 to Aug. 5, 1909)	233	292	252	1.253	86.30
Total (4,394 days, act of 1897)	17,262	14,577	14,748	.844	101.17
Annual average (act of 1897)	1,434	1,211	1,225	.844	101.17
1910 (Aug. 6, 1909 to June 30, 1910)	1,868	838	936	.449	111.69
1911	124	130	117	1.048	90.00
1912	877	712	654	.812	91.85
1913	527	353	317	.670	89.80
1914 (July 1 to Dec. 31, 1913)	4,782	2,318	2,516	.485	108.54
Total (1,609 days, act of 1909)	8,178	4,351	4,540	.532	104.34
Annual average (act of 1909)	1,855	987	1,030	.532	104.34
1914 (Jan. 1 to June 30)	3,284,695	1,490,097	120,570	.484	8.09
1915	3,494,733	1,800,486	147,118	.515	8.17
1916	1,485,908	570,044	77,560	.384	13.61
1917	136,375	82,723	13,579	.607	16.42
1918	96,455	116,585	10,515	1.209	9.02
1918 (July 1 to Dec. 31)	15,316	23,738	1,896	1.550	7.99
1919 (calendar year)	732,879	848,675	71,944	1.158	8.48
1920 (calendar year)	1,062,932	1,348,276	125,710	1.268	9.32
1921 (calendar year) [2]	15,389,644	10,298,562	876,553	.669	8.51
1922 (Jan. 1 to Sept. 21) [3]	1,118,060	1,089,349	576,672	.974	52.94
Total (3,186 days, act of 1913)	26,816,997	17,668,535	2,022,117	.659	11.44
Annual average (act of 1913)	3,072,255	2,024,173	231,661	.659	11.44
1922 (Sept. 22 to Dec. 31)	1,207,051	693,010	536,929	.574	77.48
1923 (calendar year)	3,980,450	2,426,718	1,798,892	.610	74.13
1924 (calendar year)	576,096	429,126	275,937	.683	68.76

[1] Imports of tops, roving, etc., were not recorded prior to act of 1894.
[2] Includes 29,413 pounds, valued at $26,104, paying emergency tariff act surtax of 45 cents a pound in addition to the regular ad valorem duties.
[3] Includes 1,070,790 pounds, valued at $1,039,171, paying emergency tariff act surtax of 45 cents a pound in addition to the regular ad valorem duties.

TABLE 10A.—*Tops of wool or camel's hair* [1]*—Imports for consumption—Revenue, 1914–1924*

Fiscal year (unless otherwise stated)	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	Pounds				*Per cent*
1914 (Jan. 1 to June 30)	3,228,237	$1,453,287	$116,263	$0.450	8.00
1915	3,412,250	1,770,917	141,673	.519	8.00
1916	665,764	284,696	22,776	.428	8.00
1917	21,007	17,184	1,375	.818	8.00
1918	69,161	98,108	7,849	1.419	8.00
1918 (July 1 to Dec. 31)	15,234	23,624	1,890	1.551	8.00
1919 (calendar year)	709,300	813,667	65,093	1.147	8.00
1920 (calendar year)	853,719	1,098,003	87,840	1.286	8.00
1921 (calendar year) [2]	14,788,322	9,766,584	792,011	.660	8.11
1922 (Jan. 1 to Sept. 21) [3]	1,068,539	1,025,193	550,782	.959	53.72
Total (3,186 days, act of 1913)	24,831,533	16,351,263	1,787,552	.658	10.93
Annual average (act of 1913)	2,844,792	1,873,261	204,789	.658	10.93
1922 (Sept. 22 to Dec. 31) [4]	1,181,009	673,084	524,350	.570	77.90
1923 (calendar year) [4]	3,932,234	2,388,784	1,775,394	.607	74.32
1924 (calendar year) [4]	549,505	412,753	263,887	.751	63.93

[1] Not separately recorded prior to act of 1913.
[2] Includes 23,743 pounds, valued at $17,552, paying emergency tariff act surtax of 45 cents a pound in addition to the regular duty of 8 per cent ad valorem.
[3] Includes 1,041,704 pounds valued at $1,011,450, paying emergency tariff act surtax of 45 cents a pound in addition to the regular duty of 8 per cent ad valorem.
[4] Tops and other partial manufactures of wool or hair other than mohair.

TABLE 10B.—*Tops of mohair, alpaca, etc.*[1]*—Imports for consumption—Revenue, 1914–1924*

Fiscal year (unless otherwise stated)	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	Pounds				*Per cent*
1914 (Jan. 1 to June 30)	33,165	$11,356	$2,271	$0.342	20.00
1915	66,723	25,663	5,133	.385	20.00
1916	765,621	266,308	53,262	.348	20.00
1917	95,833	58,013	11,602	.605	20.00
1918	12,363	9,901	1,980	.801	20.00
1918 (July 1 to Dec. 31)	6	38		6.333	Free.[2]
1919 (calendar year)	22,655	33,752	6,750	1.490	20.00
1920 (calendar year)	139,077	148,729	29,746	1.069	20.00
1921 (calendar year) [3]	392,638	328,601	68,077	.837	20.72
1922 (Jan. 1 to Sept. 21) [4]	49,247	63,905	25,747	1.298	40.29
Total (3,186 days, act of 1913)	1,577,328	946,266	204,568	.600	21.62
Annual average (act of 1913)	180,705	108,408	23,435	.600	21.62
1922 (Sept. 22 to Dec. 31) [5]	26,042	19,926	12,579	.765	63.13
1923 (calendar year) [5]	48,216	37,934	23,498	.787	61.94
1924 (calendar year) [5]	26,591	16,373	12,050	.616	73.59

[1] Not separately recorded prior to act of 1913.
[2] From Philippine Islands.
[3] Includes 5,238 pounds, valued at $7,221, paying emergency tariff act surtax of 45 cents a pound in addition to the regular duty of 20 per cent ad valorem.
[4] Includes 28,812 pounds, valued at $27,470, paying emergency tariff act surtax of 45 cents a pound in addition to the regular duty of 20 per cent ad valorem.
[5] Tops and other partial manufactures of mohair.

TABLE 10C.—*Roving or roping of wool or hair*[1]*—Imports for consumption—Revenue, 1914–1922*

Fiscal year (unless otherwise stated)	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	Pounds				*Per cent*
1914 (Jan. 1 to June 30)	852	$374	$30	$0.439	8.00
1915[2]					
1916[2]					
1917[2]					
1918[2]					
1918 (July 1 to Dec. 31)					
1919 (calendar year)	224	349	28	1.558	8.00
1920 (calendar year)	18	24	2	1.333	8.33
1921 (calendar year)[3]	240	419	77	1.746	18.38
1922 (Jan. 1 to Sept. 21)[4]	2	2	1	1.000	50.00

[1] Not separately recorded prior to act of 1913.
[2] No imports recorded as roving or roping.
[3] Includes 96 pounds, valued at $367, paying emergency tariff act surtax of 45 cents a pound in addition to the regular duty of 8 per cent ad valorem.
[4] Dutiable under emergency tariff act at 45 cents a pound and 8 per cent ad valorem.

TABLE 10D.—*Partially manufactured wool or hair n. s. p. f.*[1]*—Imports for consumption—Revenue, 1914–1922*

Fiscal year (unless otherwise stated)	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	Pounds				*Per cent*
1914 (Jan. 1 to June 30)	22,441	$25,080	$2,006	$1.118	8.00
1915[2]	15,760	3,906	312	.248	8.00
1916[2]	54,523	19,040	1,523	.349	8.00
1917[2]	19,535	7,526	602	.385	8.00
1918[2]	14,931	8,576	686	.574	8.00
1918 (July 1 to Dec. 31)	76	76	6	1.000	8.00
1919 (calendar year)	700	907	73	1.296	8.00
1920 (calendar year)	70,118	101,520	8,122	1.448	8.00
1921 (calendar year)[3]	208,444	202,988	16,388	.974	8.07
1922 (Jan. 1 to Sept. 21)[4]	272	249	142	.915	57.03

[1] Not separately recorded prior to act of 1913.
[2] Includes roving or roping.
[3] Includes 336 pounds, valued at $964, paying emergency tariff act surtax of 45 cents a pound in addition to the regular duty of 8 per cent ad valorem.
[4] Dutiable under emergency tariff act at 45 cents a pound and 8 per cent ad valorem.

General imports.—General imports of tops, by countries, were not recorded prior to 1916. Table 11 shows the countries furnishing these imports and the quantities supplied by each country for the years 1916–1924:

TABLE 11.—*Wool tops*[1]*—General imports, by countries, 1916–1924*

[Quantity in pounds]

Country of origin	Fiscal year—			July 1 to Dec. 31, 1918
	1916	1917	1918	
United Kingdom	447,958	1,039	17,353	
Australia			40	
France	25,192			
Argentina			62,200	15,200
Canada	10,033	4	3,320	34
Uruguay		4,810		
Total	483,183	5,853	82,913	15,234

[1] For 1916, 1917, 1918, 1919, 1920, and 1921 tops only were recorded in statistics.

TABLE 11.—*Wool tops—General imports by countries, 1916–1924*—Continued

[Quantity in pounds]

Country of origin	Calendar year—					
	1919	1920	1921	1922 [1]	1923 [1]	1924 [1]
United Kingdom	429,436	461,011	13,230,693	2,861,380	2,799,345	292,272
Australia	516,155	465,366	1,028,231	728,969	176,466	29,809
Germany			51,121	437,722	21,268	1,666
France		141,951	400,611	382,473	301,839	168,663
Argentina	14,609	21,883		206,066	312,638	
Belgium		35,001	224,373	73,893	65,790	
Canada	653	26,088	82,808	17,389	196,129	37,512
Italy		240				
Spain		16,163				
Bolivia		58				
Chile		6,699				
China		592			31,103	
Japan	20,061		26			
Switzerland			20,754			
Total	980,914	1,175,052	15,038,617	4,707,892	3,904,578	529,922

[1] Wool and hair advanced in any manner, including tops.

In 1916 the United Kingdom furnished 93 per cent of the total quantity; in 1917 and 1918 imports were relatively small and came largely from South America; in 1919, 53 per cent came from Australia and 42 per cent from the United Kingdom. In 1920 Australia and the United Kingdom furnished about equal quantities, approximately 40 per cent each, and France about 12 per cent. In 1921 the United Kingdom far exceeded all other countries, sending to this country 88 per cent of the total, while Australia furnished only about 7 per cent. During 1922 the United Kingdom supplied nearly 61 per cent, Australia 15 per cent, Germany 9 per cent, and France 8 per cent. In 1923, 71.8 per cent came from the United Kingdom, 8 per cent from Argentina, 7.7 per cent from France, 5 per cent from Canada, 4.5 per cent from Australia, 1.7 per cent from Belgium, 0.8 per cent from China, and 0.5 per cent from Germany. During 1924 the United Kingdom furnished 55 per cent, France 32 per cent, Canada 7 per cent, Australia 5.4 per cent, and Germany three-tenths of 1 per cent of the total quantity imported.

Table 12 shows the average value per pound of wool tops and other partial manufactures of wool or hair imported from the countries furnishing the bulk of these commodities, also the average value for all countries, during the years 1919 to 1924 inclusive.

TABLE 12.—*Wool tops—Average import values per pound, 1919–1924*

Country of origin	1919	1920	1921	1922 [1]	1923 [1]	1924 [1]
United Kingdom	$0.71	$1.01	$0.63	$0.55	$0.64	$0.88
Argentina	1.44	1.75		.22	.26	
France		1.67	.83	.98	.95	.90
Canada	.92	1.48	1.28	.35	.53	.41
Australia	1.64	1.18	.75	1.03	1.05	.71
Belgium		2.58	1.31	.74	.96	
Germany			.66	1.09	.94	.78
Average for all countries	1.23	1.23	.66	.70	.65	.85

[1] Includes also other partial manufactures of wool or hair.

Table 12 shows that in 1919 the unit value of wool tops from Australia was highest, with Argentina second, Canada third, and the United Kingdom fourth. In both 1920 and 1921 the unit value was highest for Belgium and lowest for the United Kingdom. In 1922 and 1923 the value per pound of tops, including other partial manufactures, averaged highest for Australia, with tops from Germany, France, and Belgium nearly as high; those from the United Kingdom were only 57 per cent of the average value of those from Australia. Argentina furnished tops of the lowest value, the unit value per pound being only 23 per cent of those coming from Australia. For 1924 the unit value per pound of imports averaged the highest for France. Using the French unit value as a basis of comparison the average value of tops from other countries was 2 cents less for the United Kingdom, 12 cents for Germany, 19 cents for Australia, and 49 cents for Canada.

The Department of Commerce reports the entrance into this country of wool tops and wool and hair advanced, by customs districts, as follows:

TABLE 13.—*Wool tops—Imports by customs districts, 1919–1924*

[Quantity in pounds]

Customs district	1919	1920	1921	1922 [1]	1923 [1]	1924 [1]
Massachusets	819,028	808,676	10,626,472	4,340,270	3,054,822	301,053
Rhode Island	36,346	103,955	81,577	17,045	53,465	
New York	122,914	154,261	3,248,264	163,652	125,659	203,058
Philadelphia	2,562	78,592	599,924	185,037	644,409	25,808
St. Louis			1,005	1,250	1	
Los Angeles		2,922	4,878	451		
San Francisco		592	335,049	187	160	
Buffalo		1,315			26,053	
St. Lawrence	64	104	30			
Vermont		24,635	82,718		4	
Maine and New Hampshire			58,700		5	
Dakota						3
Total	980,914	1,175,052	15,038,617	4,707,892	3,904,578	529,922

[1] Figures include other partial manufactures of wool or hair.

Table 13 shows that Massachusetts received far larger quantities than any other State. For three years preceding 1922, New York held second place, but since that year Philadelphia has been second.

The percentages in Table 14, based on the figures in Table 13, are given for the four leading States since 1919.

TABLE 14.—*Wool tops—Imports by customs districts, 1919–1924*

[Per cent distribution]

Customs district	1919	1920	1921	1922 [1]	1923 [1]	1924 [1]
Massachusetts	83.50	68.82	70.66	92.19	78.24	56.81
New York	12.53	13.13	21.60	3.48	3.22	38.32
Philadelphia	.26	6.69	3.99	3.93	16.50	4.87
Rhode Island	3.70	8.85	.54	.36	1.37	None.
All other	.01	2.51	3.21	.04	.67	[2]
	100.00	100.00	100.00	100.00	100.00	100.00

[1] Includes also other partial manufactures of wool or hair.
[2] Negligible.

Boston has always been the largest port of entry, probably because Massachusetts consumes greater quantities of these products than any other State.

Character of imported tops.—The types of tops most commonly imported in 1923 at Boston, and these were in all probability characteristic of the whole country, were 48s, 50s, 56s, and 58s; those coming in to a less extent, in the order of quantity, were 60s, 64s, 70s, 80s, 46s, and 44s. Imports in 1924 consisted mainly of the types imported in 1923, except that the largest single item was 60s black.

PRICES

Landed costs of tops invoiced at various prices.—Table 15 shows the landed costs and the wholesale selling prices in the United States of tops invoiced at from 30 cents to $1.75 a pound. The landed costs are derived by adding to each arbitrary invoice price the probable landing charges and the equivalent specific duty applicable under the act of 1922. These landed costs plus 5 per cent for the expenses and profit of the importer give the probable wholesale selling prices on the American market.

TABLE 15.—*Landed costs and probable selling prices in the United States of wool tops invoiced at various prices per pound*

Foreign selling price	Landing charges [1]	United States duty	Total landed cost	Probable selling price in United States [2]
$0.30	$0.03	$0.39	$0.72	$0.76
.40	.03	.41	.84	.88
.50	.03	.43	.96	1.01
.60	.03	.45	1.08	1.13
.70	.03	.47	1.20	1.26
.80	.03	.49	1.32	1.39
.90	.03	.51	1.44	1.51
1.00	.03	.53	1.56	1.64
1.10	.03	.55	1.68	1.76
1.20	.03	.57	1.80	1.89
1.30	.03	.59	1.92	2.02
1.40	.03	.61	2.04	2.14
1.50	.03	.63	2.16	2.27
1.75	.03	.68	2.46	2.58

[1] Includes ocean freight, insurance, and commission charges.
[2] Includes 5 per cent on landed cost for importer's overhead and profit.

Comparison of United States prices of imported and domestic tops.—The types of comparable English and American tops selected for price-comparison purposes are given below:

English quality	Comparable United States type
Merino:	
70s average	Fine.
60s ordinary	Half blood.
Cross-bred colonial carded:	
58s super comeback	High three-eighths blood.
56s average	Low three-eighths blood.
50s average	High one-fourth blood.
44s average	Low one-fourth blood.

Table 16 shows the actual selling price per pound of English tops in England, their probable landed cost and selling price in this country, and the price at which comparable United States tops were sold during the months of May, 1914, May, 1924, and February, 1925.

TABLE 16.—*Approximate selling price per pound in the United States of English and comparable American wool tops during May, 1914, May, 1924, and February, 1925*

Quality	Year and month	Selling price in England [1]	United States duty	Landing charges [2]	Total landed cost of English tops in United States	Probable selling price of English tops in United States [3]	Selling price of comparable United States tops [4]
Merino:							
70s average	May, 1914	$0.67	$0.054	$0.03	$0.75	$0.79	$0.71
	May, 1924	1.29	.588	.03	1.91	2.00	1.68
	Feb., 1925	1.41	.618	.03	2.06	2.16	2.10
60s ordinary	May, 1914	.62	.05	.03	.70	.74	.69
	May, 1924	1.11	.552	.03	1.69	1.77	1.55
	Feb., 1925	1.25	.586	.03	1.87	1.96	1.85
Crossbred colonial, carded:							
58s super comeback	May, 1914	.55	.044	.03	.62	.65	.63
	May, 1924	1.04	.538	.03	1.61	1.69	1.40
	Feb., 1925	1.19	.574	.03	1.79	1.88	1.65
56s average	May, 1914	.49	.039	.03	.56	.59	.61
	May, 1924	.84	.498	.03	1.37	1.44	1.20
	Feb., 1925	.93	.52	.03	1.48	1.55	1.45
50s average	May, 1914	.42	.034	.03	.48	.50	.53
	May, 1924	.66	.462	.03	1.15	1.21	1.12
	Feb., 1925	.74	.48	.03	1.25	1.27	1.40
44s average	May, 1914	.33	.026	.03	.39	.41	.51
	May, 1924	.49	.428	.03	.95	1.00	.95
	Feb., 1925	.60	.452	.03	1.08	1.13	1.23

[1] Prices for English tops were converted into United States currency at par for 1914, for 1924 at the rate of exchange on May 17, and for 1925 at the rate of exchange on February 13.
[2] Includes freight, insurance, and commission charges.
[3] Includes 5 per cent on landed cost for importers' overhead and profit.
[4] Prices obtained from the Textile World.

The figures in the above table show that the United Kingdom can compete on the American market only in certain kinds of tops. They also show that the United States can not compete with the United Kingdom in world markets. When domestic mills buy direct from foreign sources, the total landed cost of English tops must be the basis of comparison with American selling prices.

Using the prices quoted in Table 16 as a basis of comparison, the average price of wool tops in the United States was higher than the average price in England by 19.5 per cent in 1914, 45.5 per cent in 1924, and 58.1 per cent in 1925. Furthermore, the average price of American tops on the domestic market in February, 1925, was 22.5 per cent above that in May, 1924, and the average price of similar English tops on the English market was 12.7 per cent higher in February, 1925, than that in May, 1924. The higher selling prices of this commodity in the two countries in 1924 and 1925, as compared with 1914, were due primarily to higher raw-wool prices and greater manufacturing costs, including higher wages based on increased living costs. The variation in the rate of increase for different qualities of tops was caused mainly by the quantity available, the demand, and the price variation in the particular grades of wool required. A further analysis of Table 16 shows that the percentage increase in the selling prices in 1924 over 1914 for English

tops in England and for comparable American tops in the United States was as follows:

TABLE 17.—*Increase in selling prices of wool tops in 1924 as compared with 1914* [1]

	English tops in England	American tops in United States	Difference in rate of increase
	Per cent increase	*Per cent increase*	*Per cent*
Merino:			
70s average	92.5	136.6	44.1
60s ordinary	79.0	124.6	45.6
Crossbred colonial, carded:			
58s supercomeback	89.1	122.2	33.1
56s average	71.4	96.7	25.3
50s average	57.1	111.3	54.2
44s average	48.5	86.3	37.8
Average	72.9	113.0	40.0

[1] Raw wool entered the United States free of duty in 1914 but was dutiable in 1924.

TARIFF HISTORY

In the tariff act of 1883 imports of partial manufactures of wool or hair were dutiable, without specific mention, under the basket paragraph of the wool schedule. Partial manufactures of wool or hair were not specifically recorded in import statistics during the period of this act.

In the act of 1890, roping, roving, or tops made from wools and hair of the camel, goat, alpaca, or other like animals, and all wool and hair which have been advanced in any manner or by any process of manufacture beyond the washed or scoured condition, not specifically provided for, were made dutiable under a combination of specific and ad valorem rates. This compound rate was applied to three classifications, based upon values, i. e., (*a*) not more than 30 cents per pound; (*b*) more than 30 and not more than 40 cents per pound; (*c*) above 40 cents per pound. Imports were not specifically recorded in statistics.

The act of 1894 provided for "roving, roping, or tops," and recorded imports averaged per annum during the life of this act 3,596,884 pounds, valued at $1,190,760. The rate of duty was 20 per cent ad valorem. Imports of these articles, which had probably been negligible theretofore, increased to 5,662,953 pounds in the fiscal year 1897.

The act of 1897 provided for "wool and hair which have been advanced in any manner or by any process of manufacture beyond the washed or scoured condition" and levied compound rates of duty based on value classifications of (*a*) not more than 40 cents per pound, (*b*) above 40 and not above 70 cents a pound, and (*c*) over 70 cents a pound. During the life of the act of 1897 the equivalent ad valorem rate averaged 101.17 per cent, and the average annual imports were only 1,434 pounds, valued at $1,211.

The act of 1909 provided for "combed wool or tops," and "wool and hair which have been advanced in any manner or by any process of manufacture beyond the washed or scoured condition," and levied compound rates of duty based on value classifications of (*a*) not more than 20 cents a pound and (*b*) more than 20 cents a pound. During the life of the act of 1909 the equivalent ad valorem rate

averaged 104.34 per cent, and the average annual imports were only 1,855 pounds, valued at $987.

The act of 1913 carried greatly reduced rates, and duties were assessed on an ad valorem basis. For the first time, a distinction was made between products of wool and camel's hair, and products of the Angora goat, alpaca, and other like animals. On "combed wool or tops and roving or roping made wholly or in part of wool or camel's hair, and on other wool and hair which have been advanced in any manner or by any process of manufacture beyond the washed or scoured condition" the rate was 8 per cent ad valorem, and on "tops made from the hair of the Angora goat, alpaca, and other like animals" the rate was 20 per cent ad valorem. Under the stimulus of the lower duties, imports jumped to 6,180,632 pounds, valued at $2,944,356, in the first year (the calendar year 1914). This increase was followed by a decline during the war period, but in 1919 there was again an increase, and in the calendar year 1921 occurred the record of 15,389,644 pounds, valued at $10,298,562. That this exceptional import was probably due to the anticipation of higher rates is shown by the fact that 15,360,231 pounds of it came in during the period from January 1 to May 27 and only 29,413 pounds during the period from May 28 to December 31, 1921.

During the life of the act of 1913, with raw wool on the free list, annual imports averaged 3,471,387 pounds, valued at $2,241,195, and the equivalent ad valorem rate of duty was 8.66 per cent. Under the emergency tariff act, when raw wool was dutiable, annual imports averaged 833,141 pounds, valued at $806,692, and the equivalent ad valorem rate of duty was 54.87 per cent.

The act of 1922 provides for "Wool, and hair of the kinds provided for in this schedule, which has been advanced in any manner or by any process of manufacture beyond the washed or scoured condition, including tops, but not further advanced than roving," at 33 cents a pound and 20 per cent ad valorem. Imports during the period September 22 to December 31, 1922, amounted to 1,207,051 pounds, valued at $693,010; during the calendar year 1923 to 3,980,450 pounds, valued at $2,426,718, with the equivalent ad valorem duty of 74.13 per cent; and during the calendar year 1924 to 576,096 pounds, valued at $429,126, with the equivalent ad valorem duty of 68.76 per cent. The rates under the act of 1922 are lower than those levied by the acts of 1897 and 1909 but higher than those levied under the acts of 1894, 1913, and the emergency tariff act of 1921.

Rates of duty.—The average rates of duty—equivalent ad valorem—on wool tops, yarns, and woven fabrics in the tariff acts from 1890 to 1922 are shown as follows:

TABLE 18.—*Equivalent ad valorem rates of duty, acts of 1890–1922*

Tariff act	Tops [1]	Yarns	Woven fabrics [2]
	Per cent	*Per cent*	*Per cent*
1890	(3)	105.11	99.42
1894	20.00	38.09	48.71
1897	101.17	93.54	100.49
1909	104.34	86.12	98.00
1913 [4]	8.66	19.36	35.26
1921 (emergency tariff act)	54.87	59.09	59.20
1922 (calendar year 1923)	74.13	67.34	73.32

[1] Includes roving and other partial manufactures.
[2] Including all woven fabrics of the kinds now dutiable under paragraphs 1108 and 1109 of the tariff act of 1922.
[3] Not recorded.
[4] Not including emergency tariff act.

It will be noticed that under the acts of 1897, 1909, and 1922 the equivalent ad valorem duty on tops was higher than on yarns and woven fabrics into which they are made, but lower under the acts of 1894, 1913, and the emergency tariff act. Under all acts, with the exception of the act of 1890, the duty on yarns was less than the duty on woven fabrics.

TABLE 19.—*Tops, roving, and other partial manufactures of wool, mohair, alpaca, etc.—Rates of duty*

Act of—	Par.	Tariff classification or description	Rate of duty
1883	362	* * * all manufactures of wool of every description, made wholly or in part of wool, not specially enumerated or provided for in this act, valued at—	
		Not exceeding 80 cents per pound	35 cents per pound and 35 per centum ad valorem.
		Above 80 cents per pound	35 cents per pound and 40 per centum ad valorem.
1890	390	Wools and hair of the camel, goat, alpaca, or other like animals, in the form of roping, roving, or tops, and all wool and hair which have been advanced in any manner or by any process of manufacture beyond the washed or scoured condition, not specially provided for in this act, shall be subject to the same duties as are imposed upon manufactures of wool not specially provided for in this act.	
	392	* * * all manufactures of every description made wholly or in part of wool, worsted, the hair of the camel, goat, alpaca, or other animals, not specially provided for in this act, valued at—	
		Not more than 30 cents per pound	33 cents per pound and 40 per centum ad valorem.
		More than 30 and not more than 40 cents per pound	38½ cents per pound and 40 per centum ad valorem.
		Above 40 cents per pound	44 cents per pound and 50 per centum ad valorem.
1894	279	* * * and on wool of the sheep, hair of the camel, goat, alpaca, or other like animals, in the form of roving, roping, or tops.	20 per centum ad valorem.
1897	364	Wool and hair which have been advanced in any manner or by any process of manufacture beyond the washed or scoured condition, not specially provided for in this Act, shall be subject to the same duties as are imposed upon manufactures of wool not specially provided for in this Act.	
	366	* * * and all manufactures of every description made wholly or in part of wool, not specially provided for in this Act, valued at—	
		Not more than 40 cents per pound	33 cents per pound and 50 per centum ad valorem.
		Above 40 cents per pound and not above 70 cents per pound	44 cents per pound and 50 per centum ad valorem.
		Over 70 cents per pound	44 cents per pound and 55 per centum ad valorem.
1909	375	On combed wool or tops, made wholly or in part of wool or camel's hair, valued at—	
		Not more than 20 cents per pound	24¾ cents per pound and 30 per centum ad valorem.
		More than 20 cents per pound	36⅔ cents per pound and 30 per centum ad valorem.
	376	Wool and hair which have been advanced in any manner or by any process of manufacture beyond the washed or scoured condition, not specially provided for in this section, shall be subject to the same duties as are imposed upon manufactures of wool not specially provided for in this section.	
1913	286	Combed wool or tops and roving or roping made wholly or in part of wool or camel's hair, and on other wool and hair which have been advanced in any manner or by any process of manufacture beyond the washed or scoured condition, not specially provided for in this section.	8 per centum ad valorem.
	306	Tops made from the hair of the Angora goat, alpaca, and other like animals.	20 per centum ad valorem.

TABLE 19.—*Tops, roving, and other partial manufactures of wool, mohair, alpaca, etc.—Rates of duty*—Continued

Act of—	Par.	Tariff classification or description	Rate of duty
1921[1]...	19	Wool and hair of the kind provided for in paragraph 18,[2] when advanced in any manner or by any process of manufacture beyond the washed or scoured condition, * * *	45 cents per pound in addition to the rates of duty imposed thereon by existing law.
1922....	1106	Wool, and hair of the kinds provided for in this schedule, which has been advanced in any manner or by any process of manufacture beyond the washed or scoured condition, including tops, but not further advanced than roving.	33 cents per pound and 20 per centum ad valorem.

[1] Emergency tariff act, May 27.
[2] Wool, commonly known as clothing wool, including hair of the camel, Angora goat, and alpaca, but not such wools as are commonly known as carpet wools.

COURT AND TREASURY DECISIONS

Under the act of 1883, scoured wool in the form of tops torn up in order to be imported as waste was held not classable as waste or as manufactures of wool, but was dutiable at the rates imposed upon scoured wool as compared with unwashed wool with the additional duties imposed upon wools changed in character or condition for the purpose of evading duty. "Waste" was defined as "refuse, or material that is not susceptible of being used for the ordinary purpose of manufacture." (Patton *v.* United States, 159 U. S. 500, of 1895; also Juillard *v.* Magone, 37 Fed. 857, of 1889.)

This case was followed by the Board of General Appraisers in classifying wool tops, designedly broken and not incidentally produced as refuse in the process of wool manufacture, under paragraph 279 of the act of 1894 as wool in the form of tops, and not under paragraph 685 as wool waste. (G. A. 4050, T. D. 18737, of 1897.)

Wool tops, imported with a scouring machine to be used for covering the top rollers thereof and not an essential part of the machine, are dutiable as wool tops and are not to be considered with the machine as an entirety. (Abstract 27169, T. D. 32031, of 1911.) Human hair tops were held not to come within paragraph 286, and to be dutiable under paragraph 385 of the act of 1913 as unenumerated manufactured articles. (Abstract 38842, and T. D. 36200, of 1915.)

Cashmere tops and cashmere cardings were held dutiable under paragraph 286 of the act of 1913 and not under paragraph 306 of that act (Abstracts 46267 and 46475), following United States *v.* Tattersfield (11 Ct. Cust. Appls. 492), in which it was held that the soft silky undergrowth on the Chinese Cashmere goat more nearly resembled "wool of the sheep, hair of the camel" than "hair of the Angora goat, alpaca," and was therefore exempt from duty under paragraph 650 of the act of 1913 and not dutiable under paragraph 305.

Crêped wool made from wool tops by a number of manufacturing processes, including dyeing, crimping, and braiding on two cotton cords, and used as material in the manufacture of hair rolls, doll wigs, and theatrical wigs and mustaches, was held to be too far advanced to be classified under paragraph 286 of the act of 1913 as combed wool

[illegible] or roping or wool advanced beyond the washed or scoured condition, and to have become a manufacture of wool under paragraph [illegible] (Muenstaedt, Inc., *v.* United States, 12 Ct. Cust. Appls. [illegible] T. D. 39537.) Merchandise known variously as curly mohair, curled mohair, and curly mohair tops, made from mohair tops by various manufacturing processes, including dyeing and curling, was held to be too far advanced to be classified as mohair tops under paragraph 306 of the act of 1913 and to be dutiable as a manufacture of mohair under paragraph 308. (Same *v.* Same, T. D. 39539.)

Wool which has been carbonized, the purpose and effect of the carbonizing being only to free it from such substance as burrs, grass, and weeds, has been held not to be taken beyond the provision of paragraph 1102 of the act of 1922 for clean wool into that of paragraph 1106 for advanced wool. (United States *v.* Stone, 12 Ct. Cust. Appls. [illegible] T. D. 40296, of 1924.)

SECTION 2

YARNS OF WOOL, MOHAIR, ALPACA, ETC.

General Information

Tariff Act of September 21, 1922

PAR. 1107. Yarn, made wholly or in chief value of wool, valued at not more than 40 cents per pound, 24 cents per pound and 30 per centum ad valorem; valued at more than 40 cents but not more than $1 per pound, 36 cents per pound and 40 per centum ad valorem; valued at more than $1 per pound, 36 cents per pound and 40 per centum ad valorem.

DOMESTIC PRODUCTION

The yarns included in this paragraph are those made wholly or in chief value of wool of the sheep, or of hair of the camel, Angora goat, Cashmere goat, alpaca, or other like animals. The principal types are woolen and worsted yarns. Practically all woolen and most of the worsted yarns consumed in this country are produced by domestic manufacturers. A small percentage of the worsted yarn used is imported, and a relatively small quantity of the yarn made here is made from imported tops.

Description and uses.—In the wool textile industry two distinct branches are recognized by those directly engaged, but have little or no significance to the general public. These are the "woolen" and "worsted" industries. In general, the word "worsted" is little known to the consuming public, and the word "woolen" is often indiscriminately applied to all fabrics made of wool.

Woolen yarns are made from raw wool of the general class known as clothing wool, or from raw wool mixed with shoddy, with wool waste or with cotton. When these yarns are made of a mixture of wool and cotton they are known to the trade as "merino yarns." Woolen yarns, being carded only, have a fuzzy surface, a softness to the touch, and a fullness of appearance not characteristic of worsted yarns, and are adapted to the making of fulled fabrics. Woolen cloths are usually thicker and of greater body than worsted cloths.

In lightweight woolens the fibers are often raised by a teazeling process to give a napped surface. Typical woolens are billiard cloths, broadcloths, beavers, kerseys, meltons, cheviots, tweeds, doeskins, cassimeres, and blankets.

Worsted yarns are made from raw wool known as combing wool. The wool is usually carded and then combed; the combing process removes the shorter fibers (noils). The remaining fibers, being of about the same length and parallel to each other, are worked into a thick strand and then formed into a ball-shaped article called a wool top. A number of wool-top strands are passed together through many processes, which combine and draw out the fibers, the final result being a single strand of a size that can be spun into the yarn desired. The arrangement of the fibers, as well as the methods employed in the manufacture of worsted yarns, tends to produce smoother, harder twisted yarns than does the woolen-yarn process. Worsted yarns therefore produce a fabric that has a weave structure more sharply defined and a smoother surface than the customary woolen fabric. Typical worsteds are such fabrics as serges, clays, and gabardines.

Large quantities of woolen and worsted yarns are also used in the manufacture of furniture upholstery, carpets, rugs, hosiery, and other knit goods, and smaller amounts are consumed in making woven felt, and in silk and cotton goods mixed with wool yarns.

Mohair yarns are employed in the manufacture of dress goods, coat linings, light coatings, shawls, scarfs, braids, rugs and mats, button coverings, bootlaces, imitation furs, and plush. Mohair plushes are extensively employed in covering Pullman car and automobile seats and for furniture upholstery.

From the yarns made of camel's hair the production in this country is mainly of press cloth for oil milling. They are also used to some extent in making cloakings, dress goods, interlinings, and knit goods, and to a less extent for carpets and belting. Alpaca yarns are made into dress goods, linings, plushes, hosiery, and umbrella cloths. Yarns of cashmere are used in manufacturing dress goods, shawls, and hosiery.

By-products.—In the manufacture of yarns the by-products include card, top, slubbing, roving, ring, and yarn or thread wastes.

Raw materials and their sources.—The United States imports raw wool and hair chiefly from Australia, South America, the United Kingdom, New Zealand, Turkey, China, South Africa, and India. Wool tops are mainly from England, Australia, and France.

Classification of wool.—The classification of wool grades in the different wool-growing countries is not at all uniform. Chart B shows the lack of uniformity in the classification used to-day (1925) and the tentative standards suggested by the United States Department of Agriculture. It is hoped that with the general adoption of standards of terminology, the indefiniteness of the conflicting systems of nomenclature will disappear.

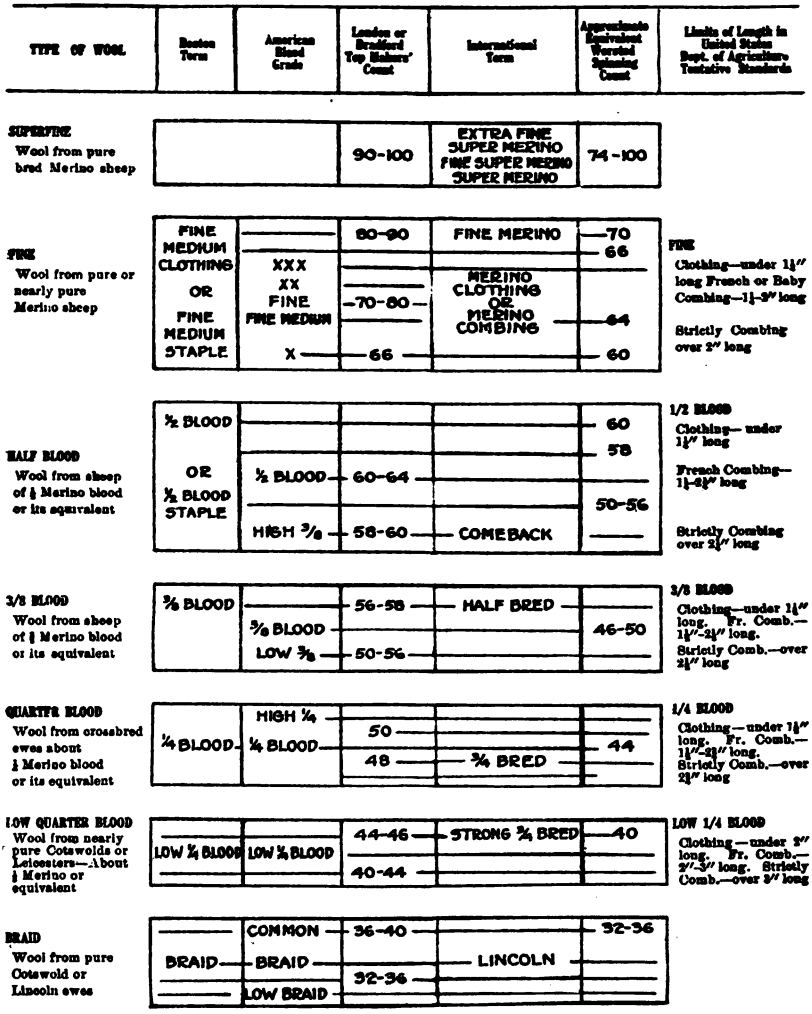

CHART B.—Approximate comparison of wool grades grouped according to system of classification

(Source: Reference book of the National Association of Wool Manufacturers, Feb. 1, 1922)

Methods of production.—Several different systems are used in converting scoured wool into yarn, the particular system employed depending on the kind of fiber used and the type of yarn desired.

Woolen yarns are made with comparatively few processes; the scoured wool is passed through woolen cards, and the roving therefrom goes direct to the woolen "mule," or to the spinning frame, for conversion into yarn. Most woolen yarn is spun on the "mule," which draws out and makes smaller the strand of fibers known as roving, twists these fibers into yarn, and winds the yarn upon a bobbin. This rather complex machine operates on the same principle as the old-fashioned spinning wheel. The winding of the yarn on the bobbin is not actually a part of the spinning, but it is a necessary operation in the process of spinning.

Spinning frames for making woolen yarn have been used to some extent for several years, but only recently has a machine been invented and perfected in this country for the continuous spinning of carded wool fibers. Earlier machines produced yarn of rather hard twist, but this new invention is said to make a wide range of soft to hard yarns. Among the advantages derived from its use, as compared with the "mule," are greater production, reduced labor costs, and extensive saving in floor space.

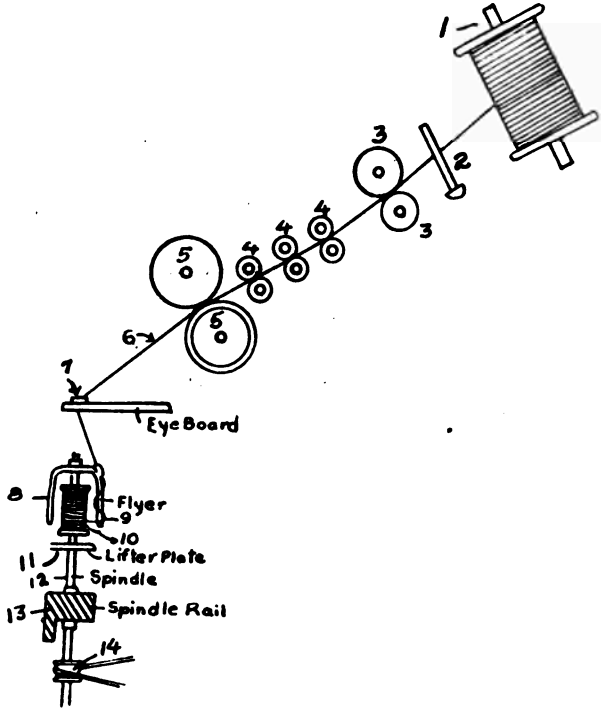

FIGURE 1.—Worsted fly spinning

1—Bobbin of roving	5—Front rolls.	9—Eye in flyer.	12—Spindle.
2—Roving guide.	6—Yarn.	10—Yarn bobbin.	13—Spindle rail.
3—Back rolls.	7—Yarn eye guide.	11—Bobbin lifter plate.	14—Spindle whorl.
4—Carrier rolls.	8—Flyer		

For making worsted yarns the scoured wool fiber must be subjected to carding, gilling, combing, drawing, and finishing processes, the object of which is to produce a roving whose fibers are thoroughly separated, lie parallel, and are largely freed from their curlines. After such processing the roving is ready to be spun into worsted yarn. Stated briefly, the spinning process is performed in three major operations: (*a*) Drawing out or drafting the roving; (*b*) twisting the drawn-out roving and producing a yarn; and (*c*) winding the yarn onto the bobbin. Four distinct methods are employed for these operations, (1) the flyer frame, (2) the cap frame, (3) the ring frame, and (4) the worsted mule. Each of these methods requires complicated machinery. Figure 1 illustrates the operations involved in drawing out the roving, imparting the twist, and winding the yarn upon a bobbin, by the flyer spinning frame.

... back, carrier, and front rolls,
... spindles, and lifting plates,
... down on the spindles. Bobbins
... of the frames of the machine,
... passed between the back rolls
... After the roving passes through
... front rolls. As the front rolls
... roving is drawn out and reduced
... difference between the surface speeds
... the "draft"; if this "draft"
... drawn out to a greater extent.
... passes through a small guide
... flyer and through an eye at the
... bobbin. This bobbin fits loosely
... leather, or paper washer. The
... bobbin and regulates, to a large extent,
... from the flyer. As the yarn is
... twist is imparted to it by the flyer.
... flyer frame in the type of its spindle
... consequently has a different method of
... bobbin. Drafting is the same by both

... the "cap" (which is a hollow tube or
... bobbin that it must cover) is attached
... Both spindle and cap are stationary.
... under the cap on the spindle (the cap
... for this purpose), and the bobbin is
... required speed around the spindle. When
... up and down, by means of a lifter plate,
... "building" or winding the yarn on the
... passage to the revolving bobbin neces-
... with the bottom rim of the cap, which
... wound on the bobbin. Twist is put into the
... motion of the bobbin, the amount of twist
... upon the relation between the speed of the
... which the drafted roving is delivered from

... is especially adapted to making fine counts
... and the finer crossbred wools, and the produc-
... for the same counts, much greater than that of
... yarn is whirled around the cap at a speed of six
... volutions per minute, and as it is not protected
... on against the air causes the fibers to be raised.
... the yarn has a rough and hairy appearance,
... roughness is not apparent.

Although cap frames give greater production than flyer frames, the increased quantity produced by the former is not always advantageous, because cap-frame yarn is rougher and the percentage of flyings considerably larger than in flyer-spun yarn. Figure 2 shows how this yarn is spun.

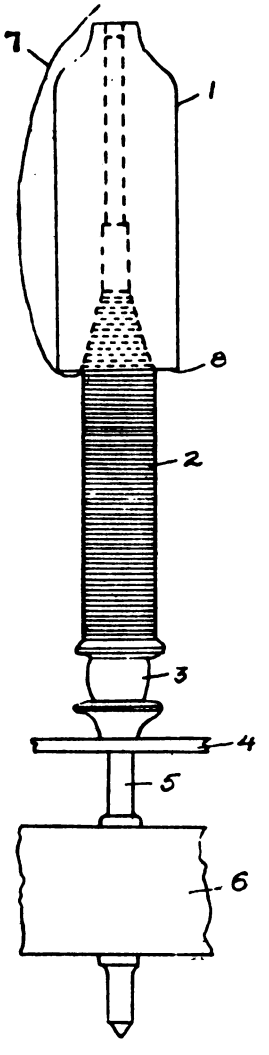

FIGURE 2.—Worsted cap spinning

1—Cap.
2—Yarn bobbin.
3—Yarn bobbin drive.
4—Bobbin lifter plate.
5—Spindle.
6—Spindle rail.
7—Yarn.
8—Bottom of cap.

Ring-frame spinning is used to a comparatively small extent for the production of worsted yarns; it is, however, almost universally employed in this country for spinning cotton yarns.

drafting process is practically the same as ... cap spinning. The fundamental differ- ... processes of spinning occur in the twisting and ... that the bobbin (5) revolves with the ... move up and down as in the case of the ... The ring (2) is secured to the ring rail ... is loosely attached to the ring. The ring ... around the ring by the pulling action of ... to the bobbin, while at the same time ... motion of the ring rail causes the yarn ... bobbin as required. The ring frame is ... of a wide range of sizes of smooth, hard- ... Because of the limitations its use would impose ... to be used and the character of the yarn ... it is rarely employed in the worsted industry ... purposes. The ring spinning frame ... to a bobbin is illustrated in Figure 3.

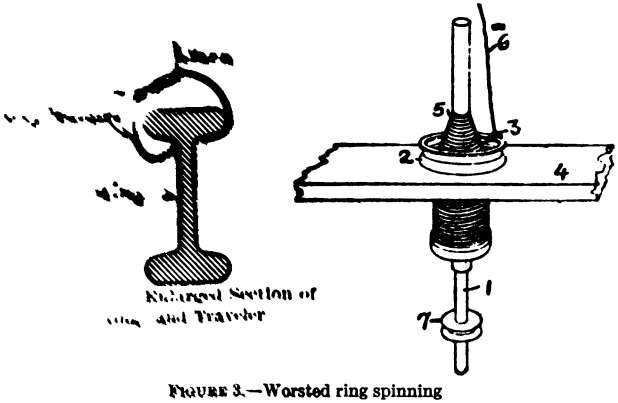

FIGURE 3.—Worsted ring spinning

4—Ring traveler. 5—Yarn bobbin. 7—Spindle whorl or
3—Ring rail. 6—Yarn. pulley.

... spinning is employed when the French system of ... is used. In this system of drawing no twist is imparted to ... This roving is drawn out into a yarn, not by the spindle ... the woolen mule, but between two pairs of rollers, the ... revolving at a greater circumferential speed than the back ... Worsted-mule spinning has distinct advantages over frame ... in that short, weak wools which can not stand the strain ... can be spun into worsted yarn, and the yarn thus ... has a peculiar loftiness and softness which is well adapted ... soft draping dress goods and also knitted fabrics.

... kind and character of wools used, and the yarns produced ... methods of spinning described above, the following general ... may be made: The flyer is employed for producing ... yarns from mohair, alpaca, and long English wools; the cap, ... made from botany and the finer crossbred wools; the ring ... available for the production of yarns made from medium cross- ... wools, but it is chiefly used for doubling purposes; and the ... for those yarns which are produced from short-staple wools, ... particularly for dry-spun dress and hosiery yarns, in which ... and fineness are required.

Conditions under which yarns are made differ widely, depending upon the quality of the fiber and the type of product required, and, particularly for worsted yarns, there is considerable variety in the method of production.

The yarn obtained from the spinning frames and the mule has, as a rule, to undergo another operation before it is ready for manufacture.

For weaving purposes, worsted filling yarns are usually either re-wound upon special bobbins for use in the shuttle, or they are doubled and twisted and then re-wound. Warp yarns, on the other hand, pass through a number of operations before thay are ready for future use. Among the various machines employed for preparing warp yarns, the more important are winders, doublers and twisters; warpers for winding yarn onto beams; and slashers for applying size. In any case the machines used and the operations required necessarily vary with the kind of yarn and the purpose for which the yarn is intended.

Organization.—Wool-yarn manufacture is fully developed, and the yarns produced are standardized and classified under two general heads, woolen yarn and worsted yarn. Woolen yarns are made largely by mills producing finished woolen fabrics, while a considerable quantity of the worsted yarn used in making finished worsted fabrics is purchased outside of the mills producing these goods.

Of the five branches into which the wool-manufacturing industry is divided by the Census Bureau, the woolen is first in the weight of yarn produced, worsted second, carpet and rug third, knit goods fourth, and woven-felt goods fifth.

In the manufacture of carpets and rugs there are used large quantities of woolen and worsted yarns. The census figures for 1919 show that about 61 per cent of these yarns required by the carpet and rug mills were spun in the establishments where consumed, while the remainder was purchased outside. Yarns required in making carpets and rugs are rarely imported, but the raw wool from which they are made is mainly of foreign origin.

According to the census figures of 1919, of the total quantity of woolen and worsted yarns consumed by the knit-goods industry, 74 per cent was purchased, and only 26 per cent was made by the knitting mills.

In the felt-goods industry the census of 1919 shows that only woolen yarns were used, and that all of them were made by the woven-felt mills where they were consumed.

The great difference in the character of yarns produced leads to wide variations in the organization of manufacturing firms. There were 65 concerns in the United States in 1921 that operated only as worsted-spinning mills, whereas the total number of woolen and worsted-weaving establishments were 814. Of the latter, woolen mills constituted approximately 60 per cent and worsted 40 per cent.

It is not possible to state the capital invested in the manufacture of woolen and worsted yarns, as many mills produce them in conjunction with other manufactured products, and the capital involved in making yarns is not separately given in statistics. In general, it is necessary to produce worsted yarns in large quantities, as small production is rarely profitable. Furthermore, worsted spinning-mill machinery is expensive, and as the cost of installation and operation

is high, considerable capital is required in the manufacture of worsted yarns.

Although the number of spindles does not necessarily indicate the quantity of yarn that can be made, for the output of a spindle varies with the kind and size of yarn to be spun, they do give a fair indication of the productive capacity. Census figures show that, between the years 1899 and 1919, the increase in the number of woolen spindles was about 9 per cent and that for worsted spindles it was 133 per cent.

Geographical distribution.—Woolen and worsted mills are widely distributed over the United States. According to the census of 1919, the leading States, in order of number of mills, were: Pennsylvania, Massachusetts, Rhode Island, Maine, Connecticut, New Hampshire, New York, New Jersey, Vermont, Wisconsin, Ohio, Virginia, Minnesota, Indiana, Tennessee, Michigan, Oregon, West Virginia, Illinois, Georgia, Kentucky, North Carolina, Maryland, California, Delaware, Iowa, Utah, Washington, Missouri, and Texas. Massachusetts, however, produces by far the largest quantity of yarns, with Pennsylvania second, and Rhode Island third.

According to the census figures for 1919 and 1921, the States producing the largest quantities of worsted and woolen yarns for sale were, in the order named: Pennsylvania, Massachusetts, Rhode Island, and New Jersey.

Tables 20 and 21 give the total number of woolen and worsted producing spindles, and the number in each of the more important producing States, for the census years 1899–1919, inclusive. The figures do not include spindles installed in knitting mills.

TABLE 20.—*Woolen and worsted producing spindles, 1899–1919*[1]

[By census years and States]

Census year	Kind of spindles [2]	Massachusetts	Pennsylvania	Rhode Island	New Jersey	New York	Maine
1899	Woolen	486,784	345,116	[3] 144,078	64,910	124,175	[3] 145,853
	Worsted	299,298	197,833	224,646	84,654	96,538	13,484
1904	Woolen	554,066	346,294	151,860	71,500	153,343	169,560
	Worsted	349,377	278,440	227,514	113,033	121,554	17,060
1909	Woolen	502,678	318,166	124,729	53,106	138,679	161,568
	Worsted	573,056	346,630	333,246	181,512	123,718	48,920
1914	Woolen	480,810	289,792	94,099	50,424	119,053	185,500
	Worsted	901,492	310,984	408,796	233,838	157,704	53,780
1919	Woolen	561,849	284,517	119,718	59,336	153,475	200,756
	Worsted	891,505	343,763	446,072	227,568	156,028	54,440

Census year	Kind of spindles	New Hampshire	Connecticut	Wisconsin	All other States	Total for United States
1899	Woolen	113,604	[3] 157,458	[3] 22,760	330,789	1,935,527
	Worsted	[4] 5,600	27,438	[4] 912	30,432	980,835
1904	Woolen	178,630	167,021	28,438	348,684	2,169,416
	Worsted	43,424	20,960	4,120	14,123	1,189,605
1909	Woolen	115,600	168,536	25,974	302,930	1,911,966
	Worsted	61,924	24,920	6,760	49,760	1,750,446
1914	Woolen	131,408	155,867	21,188	297,328	1,825,469
	Worsted	69,772	23,836	4,208	60,744	2,225,154
1919	Woolen	143,571	207,377	26,026	354,308	2,110,933
	Worsted	75,066	20,144	4,208	64,360	2,283,154

[1] Does not include doubling and twisting spindles, or spindles employed in the knit-goods industry.
[2] Woolen spindles include those used in shoddy manufacture.
[3] A few spindles in felt mills for which separate figures are not available are included in the figures for "All other States."
[4] Worsted spindles in worsted mills for which separate figures are not available are included in the figures for "All other States."

Table 21, derived from Table 20, gives the total number of woolen and worsted producing spindles used in wool manufactures, by States and census years, 1899 to 1919:

TABLE 21.—*Combined woolen and worsted producing spindles used in wool manufactures, 1899–1919* [1]

State	1899	1904	1909	1914	1919
Massachusetts	786,082	903,463	1,075,734	1,382,302	1,453,354
Pennsylvania	542,949	624,734	664,796	600,776	628,289
Rhode Island	368,724	379,374	457,975	502,895	565,790
New York	220,713	274,897	262,397	276,757	309,503
New Jersey	149,564	184,533	234,618	284,262	286,904
Maine	159,337	186,620	210,488	239,280	255,196
Connecticut	184,896	187,981	193,456	179,703	227,521
New Hampshire	119,204	222,054	177,524	201,180	218,637
Wisconsin	23,672	32,558	32,734	25,396	30,234
Other States	361,221	362,807	352,690	358,072	418,668
Total	2,916,362	3,359,021	3,662,412	4,050,623	4,394,087

[1] Does not include the spindles employed in the knit-goods industry.

The above table shows that woolen and worsted spindles, taken together, increased 50.7 per cent from 1899 to 1919. In 1919 the mills in Massachusetts contained about 31 per cent of the total, Pennsylvania and Rhode Island 14 per cent each, New York 7 per cent; and the other States in the order named were New Jersey, Maine, Connecticut, New Hampshire, and Wisconsin.

Of the three leading wool-manufacturing States, the figures in Table 21 show an increase of about 15 per cent in the number of woolen-producing spindles in Massachusetts in 1919 compared with 1899, and a decrease of 17 per cent in the States of Pennsylvania and Rhode Island. On the other hand, the number of worsted-producing spindles greatly increased during this period, in Massachusetts increasing 199 per cent; in Pennsylvania, 74 per cent; and in Rhode Island, 99 per cent. For the entire United States, the increase in woolen-producing spindles in 1919, over 1899, was approximately 9 per cent, whereas the worsted-producing spindles increased 133 per cent. These figures indicate that a much greater increase took place in the production of worsted than of woolen yarns between 1899 and 1919.

Productive capacity of spindles.—As previously stated, the number of spindles gives a fair indication of the yarn that can be produced, but the actual operation of these spindles is probably a better criterion of yarn production. The activity of the spindles varies greatly, however, according to the kind of yarn required by the manufacturers and the character and quantity of cloths demanded by the ultimate consumer. The figures in Table 22 show the percentage of the total woolen and worsted spindles, as reported by the census, that were active in each month during 1924, and the average percentage for the years 1919 to 1924, inclusive.

TABLE 22.—*Percentage activity of the total woolen and worsted spindles in operation, 1919–1924*

Year and month	Active spinning spindles [1]	
	Woolen	Worsted
1924	*Per cent*	*Per cent*
January	80.9	73.3
February	82.4	77.6
March	84.4	78.0
April	82.2	71.9
May	79.3	64.6
June	78.0	58.4
July	74.0	54.8
August	72.9	58.2
September	79.3	66.5
October	83.3	75.4
November	83.0	77.3
December	84.0	75.3
Yearly average	80.3	69.3
Average for year:		
1919	83.3	79.0
1920	67.4	74.1
1921	71.8	83.9
1922	82.8	77.9
1923	85.8	87.8
1924	80.3	69.3

[1] Ratio of machinery hours that the mills ran to single-shift capacity machinery hours. Since the normal basis of mill activity is less than single-shift capacity, these percentages are much lower than they would be if they represented the activity of the industry with relation to normal.

A comparison of the figures given in Table 22 indicates that in 1919 woolen spindles were in slightly greater demand. In 1920 both industries were less active than they were the year before, with worsted spindles in relatively greater use. The worsted spindles were more active than the woolen spindles in 1921, and both industries showed greater activity than in 1920. In 1922 the woolen spindles were more in demand than the worsted, although only to a small extent. Both branches were very active in 1923, with the worsted spindles in slightly greater use. During the year 1924 there was a considerable falling off in the activity of the worsted spindles and a slight decrease for woolen spindles. With the exception of January, 1919, and December, 1920, the month of lowest activity recorded for worsted spindles was July, 1924, when the average was only 54.8 per cent.

Yarn numbering.—Yarns of wool or hair are numbered according to their respective systems of manufacture; the number of a yarn indicates its approximate size as well as designates the number of yards in 1 pound. The terms or units used in the United States for the three well-known methods of numbering are the "run," the "cut," and the "count."

In the United States (except in and near Philadelphia) woolen yarns are numbered on the basis of the number of "runs" of 1,600 yards that weigh 1 pound. By this system 1 pound of 1-run yarn contains 1,600 yards, 1 pound of 2-run yarn contains 3,200 yards, 1 pound of 3-run yarn contains 4,800 yards, and so on. The finer the yarn the higher the number of the yarn. A 1 or 2 run yarn is coarse and used in overcoatings, blankets, and cotton-warp goods, where most of the weight is furnished by the filling; 3½ to 4 run yarns are medium yarns; and 6½ to 8 runs yarns are considered fine yarns.

According to the "cut" system of numbering woolen yarns, 1 pound of 1-cut yarn contains 300 yards, 1 pound of 2-cut yarn contains 600 yards, 1 pound of 3-cut yarn contains 900 yards, etc. In other words, the number of yards in a pound, by this system of numbering, is always 300 times the number designated by the "cut." Coarse yarns have the lower numbers, and as the yarn increases in fineness the number of the cut becomes higher. A 5-cut yarn is coarse, 18 to 21 cut is medium, and 30 to 35 cut is fine.

In the United States and in the United Kingdom worsted yarns are numbered on the basis of the number of hanks of 560 yards to the pound. No. 1 worsted yarn measures 560 yards to the pound; No. 30 worsted yarn measures 30 times 560, or 16,800 yards; No. 60 worsted yarn measures 33,600 yards, etc. Low numbers or counts of worsted yarn are seldom quoted on the market, but when quoted, they are usually known as roving yarns and used in knitting very heavy sweaters. The size or number of worsted yarn is commonly written as 30s, 40s, 50s, etc. Counts under 30s are considered comparatively coarse, 30s to 50s are medium, and above 50s are fine. Counts above 80s are not common.

In the manufacture of woolen cloths single yarns are more generally employed, whereas in the production of worsted cloths the bulk of the yarns used are probably two-ply. Considerable quantities of worsted cloths, however, are made with either single, two or more ply, or both single and ply yarns. A single yarn is an individual thread, and a two-ply yarn is one that has two threads twisted together. A 50s two-ply yarn is written 2–50s, or 2/50s.

Woolen yarns are usually consumed where they are made, and therefore the trade in them is small; worsted yarns, on the other hand, are produced for sale in large quantities. The worsted yarns sold in greatest quantities are probably 2–32s, 2–40s, and 2–50s for men's wear and dress goods; 2–18s, 2–20s, 2–28s, and 2–30s for sweaters, bathing suits, and other knit goods; and 1–20s, 1–30s, 1–40s, and 1–50s for knit and dress goods.

Mohair, alpaca, and similar yarns are usually made, numbered, and sold in the same way as worsted yarns.

In Germany and France the metric system of numbering worsted yarn is in common use, and this method is usually employed when such yarn is offered for sale in other countries. The metric system is based on the number of lengths of 1,000 meters weighing 1 kilogram, equivalent to the number of 496-yard lengths weighing 1 pound. To reduce the metric number to the equivalent number as used in the United States, multiply by 0.886, and to convert the United States number into the equivalent metric number, multiply by 1.129. For example: No. 60 metric number $\times 0.886 =$ No. 53.1 United States worsted yarn number; and conversely, No. 60 United States number $\times 1.129 = 67.7$ metric yarn number. See Table 44 (p. 63), in Appendix for comparable yarn sizes, with corresponding yards per pound, covering the full range of worsted and woolen yarns and comparable sizes of cotton yarn.

Domestic production and consumption.—The manufacture of woolen and worsted yarns is shown in statistics under five distinct headings, classified by industries, as: Woolen, worsted, carpets and rugs, felt goods, and knit goods. Mohair yarns are considered as worsted yarns and are included as such in the following tables.

Yarns which are made of a mixture of wool and cotton fibers, to be included under paragraph 1107, must be in chief value of wool. Statistics, however, do not show the value of wool contained in these yarns, and they are, therefore, not included in the figures shown in Tables 23 and 24. Large quantities of these yarns are used in the woolen, worsted, and knit-goods industries, and a study of the 1919 statistics show that the total consumption was about 70,000,000 pounds, with a probable value of more than $75,000,000. The quantity, 70,000,000 pounds, includes both yarns used in the mills where they were made, and the amount purchased.

Domestic production of woolen and worsted yarns for all purposes was reported by the Bureau of the Census as set forth in Table 23.

TABLE 23.—*Total production of woolen and worsted yarns made in woolen, worsted, felt, carpet, and knit goods mills, 1909–1919*

Yarn	1909	1914	1919
	Pounds	*Pounds*	*Pounds*
Woolen	170, 763, 843	205, 629, 111	232, 477, 278
Worsted	[1] 183, 940, 695	[2] 182, 944, 184	[3] 144, 334, 246
Total	354, 704, 538	388, 573, 295	376, 811, 524

[1] Includes 869,968 pounds of mohair yarn.
[2] Includes 8,844,234 pounds of mohair yarn.
[3] Includes 1,349,359 pounds of mohair yarn.

TABLE 24.—*Production of woolen and worsted yarns in woolen and worsted mills, 1914 and 1919, and yarn for sale in 1923*

Yarn	For sale	For use in same establishment		Total
		Woolen mills	Worsted mills	
Woolen—	*Pounds*	*Pounds*	*Pounds*	*Pounds*
1923	49, 577, 202	(1)	(1)	49, 577, 202
1919	28, 959, 769	147, 232, 110	18, 207, 724	194, 399, 603
1914	26, 830, 047	118, 309, 523	10, 400, 722	155, 540, 292
Worsted—				
1923	[2] 113, 467, 590	(1)	(1)	113, 467, 590
1919	[3] 75, 735, 205	1, 113, 759	61, 350, 377	138, 199, 341
1914	[4] 95, 843, 039	1, 271, 374	74, 629, 697	171, 744, 110

[1] Not recorded.
[2] Includes mohair yarn, but the quantity is not shown in statistics.
[3] Includes 1,349,350 pounds of mohair yarn.
[4] Includes 8,844,234 pounds of mohair yarn.

Table 25 gives the quantity, by industries, of the woolen and worsted yarns consumed in the mills making them, and also the amount purchased. These two quantities added together give the approximate consumption for the year 1919.

TABLE 25.—*Consumption of woolen, worsted, and mohair yarns, 1919*

Consuming industry	Consumed where made	Purchased	Total consumption
	Pounds	*Pounds*	*Pounds*
Woolen industry:			
Woolen yarn	147,232,110	2,172,487	149,404,597
Worsted yarn	1,113,759	6,189,297	7,303,056
Worsted industry:			
Woolen yarn	18,207,724	3,909,077	22,116,801
Worsted yarn	61,350,377	39,053,028	100,403,405
Carpet and rug industry:			
Woolen yarn	28,121,404	17,389,590	45,510,994
Worsted yarn	5,602,211	4,164,565	9,766,776
Knit-goods industry:			
Woolen yarn	5,861,147	5,383,926	11,245,073
Worsted yarn	532,694	12,635,631	13,168,325
Felt goods: Woolen yarn	4,095,124	Not given.	4,095,124
Silk industry: Woolen and worsted yarns	None.	[1] 1,210,388	1,210,388
Cotton industry:			
Woolen yarn	None.	115,339	115,339
Worsted yarn	None.	313,061	313,061
Total:			
Woolen yarn	203,517,509	28,970,419	232,487,928
Worsted yarn	68,599,041	62,355,582	132,165,011
Grand total	272,116,550	91,326,001	364,652,939

[1] Includes 572,054 pounds of mohair and 638,334 pounds of woolen and worsted yarns.

As shown in Table 25, the consumption of woolen yarns in 1919 was 232,487,928 pounds and of worsted yarns 132,165,011 pounds. The latter figure includes 1,210,388 pounds of woolen, worsted, and mohair yarns used in the silk industry, and of this quantity the worsted yarns employed greatly predominate.

The value of woolen and worsted yarns can not be stated, as apparently 75 per cent of these yarns are used in the mills where they are produced. The 91,326,001 pounds of yarn purchased, however, were shown by statistics to be valued at $200,483,622 in 1919.

Of the total woolen yarns manufactured, those produced for sale amounted to approximately 18 per cent in 1909 and 13 per cent both in 1914 and in 1919. Of the total worsted yarns manufactured those produced for sale amounted to approximately 49 per cent in 1909, 52 per cent in 1914, and 53 per cent in 1919. For these three census years, therefore, about 85 per cent of the yarns produced in the woolen industry were used by the producing mills, whereas in the worsted industry during the same years approximately only 50 per cent of the worsted yarns were used by the mills that made them.

Domestic exports.—Prior to 1922 statistics do not record exports of domestic-made yarns. In that year total exports of these yarns were 151,253 pounds, valued at $293,577. Of the total quantity, Mexico received about 34 per cent, Japan and Canada about 17 per cent each, and the remainder was exported in smaller quantities to 36 other countries. During 1923 these exports totaled 163,519 pounds, valued at $281,007, the bulk going to three countries, namely, Japan 39 per cent, Mexico 31 per cent, and Canada 8 per cent. The rest was shipped, in comparatively small amounts, to 35 other countries. For the year 1924 our exports were only 98,707 pounds, valued at $207,326. Mexico received about 42 per cent of the total quantity exported, England 11 per cent, Japan 9 per cent, and numerous countries less than 7 per cent each.

Table 26 shows the principal countries to which domestic wool yarns were exported in 1922, 1923, and 1924:

TABLE 26.—*Exports of wool yarns to principal countries, 1922–1924*

Exported to—	Quantity		Value		Average price per pound
	Pounds	Per cent of total	Dollars	Per cent of total	
1922					
Mexico	50,850	33.6	113,245	38.6	$2.23
Japan	25,250	16.7	40,240	13.7	1.59
Canada	25,170	16.6	42,410	14.4	1.68
Uruguay	8,881	5.9	8,496	2.9	.96
Cuba	8,325	5.5	15,903	5.4	1.91
Chile	6,271	4.1	18,460	6.3	2.94
1923					
Japan	63,936	39.1	71,022	25.3	1.11
Mexico	50,381	30.8	108,792	38.7	2.16
Canada	12,539	7.7	22,777	8.1	1.82
1924					
Mexico	41,008	41.5	93,231	45.0	2.27
England	10,950	11.1	13,184	6.4	1.20
Japan	8,798	8.9	19,072	9.2	2.17
Canada	6,610	6.7	14,909	7.2	2.26
Cuba	5,988	6.1	17,472	8.4	2.92
Argentina	4,676	4.7	16,100	7.8	3.44

FOREIGN PRODUCTION

The actual production of woolen, worsted, mohair, alpaca, cashmere, and similar yarns in foreign countries is not recorded in statistics. The productive capacity of woolen and worsted yarns is, however, indicated by the number of producing spindles used in their manufacture. The latest available information as to the number of such spindles in the leading manufacturing countries is shown in Table 27.

TABLE 27.—*Woolen and worsted spinning spindles, 1919–1921*

[Twisting spindles not included]

Country	Year	Worsted	Woolen	Total
United States	1919	2,903,503	2,019,553	4,923,056
United Kingdom	1918	3,609,545	3,111,085	6,720,630
Germany	1913	2,263,364	2,100,000	4,363,364
France	1922	2,292,409	679,131	2,971,540
Czechoslovakia	1920	450,000	596,000	1,046,000
Italy	1918	435,350	520,795	956,145
Belgium	1921	348,130	360,175	708,305

The above figures indicate that the United Kingdom holds first place in yarn production, the United States second, Germany third, and France fourth.

International trade in woolen, worsted, mohair, alpaca, and similar yarns by the most important countries is shown in Table 28.

TABLE 28.—*International trade in yarns of wool, mohair, etc., 1909–1924*

Year	United States	United Kingdom	Germany	France
1909:	*Pounds*	*Pounds*	*Pounds*	*Pounds*
Imports	299,254	23,985,703	53,357,493	5,001,576
Exports	(1)	74,069,900	18,555,457	20,840,966
1913:				
Imports	199,738	32,993,997	50,761,356	4,067,046
Exports	(1)	72,380,694	25,042,051	30,157,164
1922:				
Imports	4,431,619	15,797,028	31,931,426	4,065,944
Exports	160,905	49,781,193	9,657,912	26,720,634
1923:				
Imports	5,617,321	15,771,778	15,036,474	3,903,748
Exports	163,519	53,728,300	17,429,568	28,844,327
1924:				
Imports	3,120,690	17,801,344	42,728,675	2,958,012
Exports	98,707	62,241,800	16,112,980	34,978,845

[1] Not recorded.

In 1924 the distribution of the above import and export trade was largely as follows:

(1) For the United States:
Imports—From the United Kingdom, Germany, and France.
Exports—To Mexico about 43 per cent, while much smaller quantities went to the United Kingdom, Japan, Canada, Cuba, Argentina, Uruguay, Germany, etc.

(2) For the United Kingdom:
Imports—France and Belgium furnished the bulk; other countries were Switzerland, Netherlands, Germany, etc.
Exports—Germany received about 45 per cent of the total; smaller quantities were shipped to Japan, France, Netherlands, Denmark, Australia, Sweden, Norway, and lesser amounts went to a large number of other countries.

(3) For Germany:
Imports—From the United Kingdom about 25 per cent, other important countries were Belgium, Czechoslovakia, Switzerland, etc.
Exports—To Japan about 18 per cent; Sweden, 12 per cent; Switzerland, 10 per cent; Czechoslovakia, 8 per cent; China, 7 per cent, etc.

(4) For France:
Imports—Import statistics show only yarns of mohair, by countries. The total quantity amounted to 965,394 pounds, of which the United Kingdom furnished about 96 per cent. Of the total quantity of yarns of wool, mohair, alpaca, etc., imported (2,958,012 pounds), yarns of mohair constituted about 33 per cent. However, English statistics indicate that the bulk of the French imports of yarn of wool, alpaca, etc., as well as of mohair, are from England.
Exports—The Union of Belgium and Luxemburg received the largest quantity, the United Kingdom and Germany were second and third, respectively, and Japan and several other countries took the remainder in much smaller quantities.

In 1913 the United Kingdom exported 44,048,700 pounds of wool yarns to Germany, or about 87 per cent of the total German imports, and 2,603,800 pounds to France, or 64 per cent of the total French imports; its remaining exports were shipped to all parts of the world. During that year the United Kingdom imported 32,993,997 pounds, of which 32,725,381 pounds came from Belgium, France, and Germany. Of these, Belgium furnished 15,585,007 pounds, France 12,149,814 pounds, and Germany 4,990,560 pounds.

In 1913 France was second in exports of wool yarns with 30,157,164 pounds, and the proportions shipped to the more important countries were approximately as follows: United Kingdom, 50 per cent; Belgium, 16 per cent; Germany, 13 per cent; Brazil, 7 per cent; and Spain, 5 per cent.

Germany has for many years imported larger quantities of woolen, worsted, alpaca, and similar yarns than any other nation, and most of these importations came from the United Kingdom.

The United Kingdom is the largest producer not only of yarns of wool, but also of yarns of alpaca, mohair, and cashmere. Of the last three types of yarns it holds a preeminent place in production. In 1923 it exported 17,221,900 pounds, of which Germany took 12,879,300 pounds; in 1922 only 6,788,300 pounds, of which Germany took 2,866,600 pounds; and in 1923 9,587,600 pounds, of which Germany took 3,102,800 pounds.

The last census taken in the United Kingdom to ascertain the quantity of woolen, worsted, alpaca, mohair, cashmere, and similar yarns produced was in 1907, when it was shown that a total of 446,000,000 pounds were made. Of this, 260,000,000 pounds were woolen yarns; figures showing the quantities of each of the other yarns produced in that year are not available.

Japan is rapidly becoming one of the largest importers of woolen and worsted yarns; in 1923 its imports totaled 25,957,774 pounds, and in 1924, 20,786,776 pounds, as compared with 7,253,755 pounds in 1913. Its imports in this line are supplied mainly by the United Kingdom and Germany. The latest available production figures of wool yarns in Japan are for the year 1921, when about 22,000,000 pounds were manufactured.

IMPORTS

In the tariff act of 1890 all yarns made wholly or in part of wool or hair of the camel, goat, alpaca, or other animals, were grouped together and so recorded in imports for consumption statistics. The largest yearly importation during the life of this act was in the fiscal year 1893, when 1,202,450 pounds, valued at $702,920, entered this country.

The classification of yarns in the tariff act of 1894 was the same as in the previous act, but the equivalent ad valorem rate of duty was only about one-third. Imports immediately increased, and for the first six months, namely, from January 1 to June 30, 1895, inclusive, importations amounted to 2,426,687 pounds, valued at $1,096,750. During the whole period of this act the average yearly import was 2,559,350 pounds, valued at $1,242,955.

The acts of 1897 and 1909 classified yarns in the same manner as just stated above. The average equivalent ad valorem duty under these two acts, however, was about two and one-third times higher than that of the act of 1894. During the entire period of the acts of 1897 and 1909, or about 16½ years, imports were small; the largest for any one year was in the fiscal year 1902, when 381,892 pounds, valued at $199,334, were recorded.

Under the provisions of the act of 1913 these yarns were separated into two divisions as follows: (1) Those made wholly or in chief value of wool or of camel's hair, and (2) those made of the hair of the Angora goat, alpaca, or other like animals. To each of these divisions there was applied a different rate of duty. Imports for consumption statistics are tabulated according to these two classifications in Tables 29A and 29B. Combining both types of yarns, the equivalent ad valorem rate of duty for the last six months of the act of 1909 was 99.90 per cent, whereas the comparable equivalent ad valorem duty for the first six months of the act of 1913 was 18.86 per cent. Imports immediately increased, and for the first six months of the 1913 act they amounted to 3,233,284 pounds. During the last six months of the act of 1909 only 105,802 pounds had been imported. For the fiscal year 1915 imports reached a total of 3,299,404 pounds, valued at $2,313,677. Owing to the war, importations for the years 1916, 1917, 1918, and 1919 were relatively small compared with 1915. In the calendar year 1920 imports were slightly more than those recorded for the fiscal year 1915, and in 1921 they totaled 5,135,381 pounds, which was the largest reported for any one year up to that time. The emergency tariff act was enacted in 1921 and was effective from May 28, 1921, to September 21, 1922. Under this law considerably higher duties were imposed than those specified in the previous act, and these higher duties are reflected in the increased equivalent ad valorem rates for 1921 and 1922, as shown in Table 29. Imports for the entire period of this act (482 days) were 4,733,297 pounds, and the equivalent ad valorem rate was 59.09 per cent. The average imports per annum during the life of the act of 1913 and that of the emergency act was 2,413,012 pounds, and the equivalent ad valorem rate was 27.69 per cent.

By the terms of the present tariff act, which became effective on September 22, 1922, all yarns made wholly or in chief value of wool, hair of the camel, goat, alpaca, etc., are grouped together in one classification. Although the equivalent ad valorem rate is higher under the provisions of this act than it was under the emergency act, the imports for the first calendar year of its operation (1923) were the largest ever recorded for any one year. Total imports for consumption in 1924 shows a considerable decrease from 1923, the corresponding figures being 5,617,321 pounds for 1923 and 3,120,690 pounds for 1924.

Imports for consumption.—Table 29 is a summary of the total imports for consumption of yarns since the beginning of the act of 1890. Subsidiary Tables 29A and 29B show, respectively, imports of yarns of wool and camel's hair and yarns of mohair, etc., for the years that they were separately recorded in statistics.

TABLE 29.—*Total yarns of wool, mohair, alpaca, etc.—Imports for consumption—Revenue 1891–1924*

Fiscal year (unless otherwise stated)	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	Pounds				*Per cent*
1891 (Oct. 6, 1890, to June 30, 1891)	587,348	$392,793	$381,775	$0.669	97.19
1892	1,192,147	710,537	793,853	.596	111.73
1893	1,202,450	702,920	742,337	.585	105.61
1894	530,145	338,849	339,476	.639	100.18
1895 (July 1 to Dec. 31, 1894)	147,193	91,212	93,084	.620	102.05
Total (1,548 days, act of 1890)	3,659,283	2,236,311	2,350,525	.611	105.11
Annual average (act of 1890)	862,815	527,296	554,226	.611	105.11
1895 (Jan. 1 to June 30)	2,426,687	1,096,750	415,260	.452	37.86
1896	1,995,902	1,031,077	397,541	.517	38.56
1897	1,994,015	992,695	377,263	.498	38.00
1898 (July 1 to July 24, 1897)	146,552	66,892	24,134	.457	36.08
Total (936 days, act of 1894)	6,563,156	3,187,414	1,214,198	.486	38.09
Annual average (act of 1894)	2,559,350	1,242,955	473,485	.486	38.09
1898 (July 25, 1897, to June 30, 1898)	156,531	90,966	95,844	.581	105.36
1899	303,088	157,858	119,978	.521	76.00
1900	172,988	115,985	112,887	.670	97.33
1901	268,148	171,435	171,710	.639	100.16
1902	381,892	199,334	211,236	.522	105.97
1903	335,062	174,570	184,126	.521	105.47
1904	167,494	120,071	112,342	.717	93.56
1905	187,676	133,721	125,276	.713	93.69
1906	211,519	170,372	149,547	.805	87.78
1907	164,438	133,938	116,875	.815	87.26
1908	193,621	150,658	134,804	.778	89.47
1909	299,254	246,339	213,745	.823	86.77
1910 (July 1 to Aug. 5, 1909)	35,483	32,238	26,556	.908	82.37
Total (4,394 days, act of 1897)	2,877,194	1,897,485	1,774,926	.659	93.54
Annual average (act of 1897)	239,002	157,620	147,439	.659	93.54
1910 (Aug. 6, 1909, to June 30, 1910)	324,405	294,648	242,740	.908	82.38
1911	177,525	186,654	143,005	1.051	76.61
1912	61,030	59,470	47,245	.974	79.44
1913	199,738	114,810	122,261	.575	106.49
1914 (July 1 to Dec. 31, 1913)	105,802	67,986	67,921	.643	99.90
Total (1,609 days, act of 1909)	868,500	723,568	623,172	.833	86.12
Annual average (act of 1909)	197,018	164,141	141,366	.833	86.12
1914 (Jan. 1 to June 30)	3,233,284	2,169,474	409,187	.671	18.86
1915	3,299,404	2,313,677	441,420	.701	19.09
1916	443,306	333,568	74,279	.752	22.27
1917	536,748	519,371	125,784	.968	24.22
1918	774,583	1,337,667	252,826	1.727	18.90
1918 (July 1 to Dec. 31)	441,989	846,255	154,699	1.915	18.28
1919 (calendar year)	376,777	831,695	173,993	2.207	20.92
1920 (calendar year)	3,406,653	7,184,834	1,386,926	2.109	19.30
1921 (calendar year) [1]	5,135,381	6,514,356	1,853,071	1.269	28.45
1922 (Jan. 1 to Sept. 21) [2]	3,414,494	4,074,740	2,360,851	1.193	58.00
Total (3,186 days, act of 1913)	21,062,619	26,125,637	7,233,036	1.240	27.69
Annual average (act of 1913)	2,413,012	2,993,050	828,643	1.240	27.69
1922 (Sept. 22 to Dec. 31)	1,017,125	1,210,006	840,899	1.200	69.50
1923 (calendar year)	5,617,321	7,238,376	4,873,992	1.289	67.34
1924 (calendar year)	3,120,690	4,416,431	2,880,085	1.415	65.21

[1] Includes 1,357,503 pounds, valued at $1,430,650, paying emergency tariff act surtax of 45 cents a pound in addition to the regular ad valorem duties.

[2] Includes 3,375,794 pounds, valued at $4,045,161, paying emergency tariff act surtax of 45 cents a pound in addition to the regular ad valorem duties.

TABLE 29A.—*Yarns of wool*[1]*—Imports for consumption—Revenue, 1914–1924*

Fiscal year (unless otherwise stated)	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	Pounds				*Per cent*
1914 (Jan. 1 to June 30)	2,768,272	$1,902,591	$342,466	$0.687	18.00
1915	2,716,021	1,957,125	352,282	.720	18.00
1916	173,208	130,184	23,433	.751	18.00
1917	41,907	57,985	10,437	1.383	18.00
1918	688,984	1,165,589	209,806	1.691	18.00
1819 (July 1 to Dec. 31)	434,113	812,353	146,224	1.871	18.00
1919 (calendar year)	201,889	484,721	87,250	2.400	18.00
1920 (calendar year)	2,694,809	5,846,886	1,052,439	2.169	18.00
1921 (calendar year) [2]	4,513,110	5,519,925	1,544,555	1.444	23.68
1922 (Jan. 1 to Sept. 21) [3]	2,030,887	2,527,727	1,357,188	1.244	53.69
Total (3,186 days, act of 1913)	16,263,200	20,405,086	5,126,080	1.255	25.12
Annual average (act of 1913)	1,863,173	2,337,682	587,263	1.255	25.12
1922 (Sept. 22 to Dec. 31) [4]	403,343	525,278	352,555	1.302	67.12
1923 (calendar year) [4]	3,050,051	3,817,514	2,588,300	1.252	67.80
1924 (calendar year) [4]	1,765,290	2,740,822	1,728,094	1.553	63.05

[1] Imports here shown separately are included in Table 29.
[2] Includes 1,224,374 pounds, valued at $1,246,877, paying emergency tariff act surtax of 45 cents a pound in addition to the regular duty of 18 per cent ad valorem.
[3] Includes 2,004,882 pounds, valued at $2,513,939, paying emergency tariff act surtax of 45 cents a pound, in addition to the regular duty of 18 per cent ad valorem.
[4] Yarns of wool and other hair except mohair.

TABLE 29B.—*Yarns of mohair, alpaca, etc.*[1]*—Imports for consumption—Revenue, 1914–1924*

Fiscal year (unless otherwise stated)	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	Pounds				*Per cent*
1914 (Jan. 1 to June 30)	465,012	$266,883	$66,721	$0.573	25.00
1915	583,383	356,552	89,138	.611	25.00
1916	270,098	203,384	50,846	.753	25.00
1917	494,841	461,386	115,347	.932	25.00
1918	85,599	172,078	43,020	2.010	25.00
1918 (July 1 to Dec. 31)	7,876	33,902	8,475	4.304	25.00
1919 (calendar year)	174,888	346,974	86,743	1.983	25.00
1920 (calendar year)	711,844	1,337,948	334,487	1.879	25.00
1921 (calendar year) [2]	622,271	994,431	308,516	1.598	31.02
1922 (Jan. 1 to Sept. 21) [3]	1,383,607	1,547,013	1,003,663	1.118	64.88
Total (3,186 days, act of 1913)	4,799,419	5,720,551	2,106,956	1.192	36.83
Annual average (act of 1913)	549,839	655,368	241,381	1.192	36.83
1922 (Sept. 22 to Dec. 31) [4]	613,782	684,728	488,344	1.116	71.32
1923 (calendar year) [4]	2,567,270	3,420,856	2,285,692	1.332	66.82
1924 (calendar year) [4]	1,355,400	1,675,609	1,151,991	1.236	68.75

[1] Imports here shown separately are included in Table 29. Mohair and alpaca yarns were not separately recorded prior to the act of 1913.
[2] Includes 133,129 pounds, valued at $183,773, paying emergency tariff act surtax of 45 cents a pound and the regular duty of 25 per cent ad valorem.
[3] Includes 1,370,912 pounds, valued at $1,531,222, paying emergency tariff act surtax of 45 cents a pound and the regular duty of 25 per cent ad valorem.
[4] Yarns of mohair.

General imports.—The principal sources of imported wool yarns are the United Kingdom and Germany, although for certain years France has furnished considerable quantities. For the five years 1891 to 1895, inclusive, the total was almost equally divided between the first two countries. For the three years 1896 to 1898, inclusive,

imports from the United Kingdom to the United States were about twice the imports from Germany. During the next 11 years, 1899 to 1909, inclusive, the quantities coming from Germany exceeded those from the United Kingdom. For the entire 19-year period, 1891 to 1909, inclusive, imports from the United Kingdom were 6,202,907 pounds, while those from Germany totaled 5,576,945 pounds.

Imports by countries were not reported in our statistics for the years 1910, 1911, 1912, 1913, 1914, or 1915, but British statistics indicate that during these years they were mainly of British origin. Since 1915 the United Kingdom has supplied the bulk of imports in each year. In so far as figures are available, the yarns furnished each year since 1890 by the three principal countries, and the main ports through which these yarns entered this country, are shown in Tables 30 and 31.

TABLE 30.—*General imports of yarns of wool, mohair, alpaca, etc., by countries 1891–1924*

Fiscal year (unless otherwise stated)	Imported from—				
	United Kingdom	Germany	France	All other countries	Total from all countries
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*
1891	1,013,568	708,077	133,836	148,612	2,004,093
1892	425,882	763,379	66,012	11,855	1,267,128
1893	336,412	653,444	167,014	18,207	1,175,077
1894	221,554	293,624	28,847	2,383	546,408
1895	1,145,481	793,571	244,503	220,291	2,403,846
1896	1,021,570	478,404	326,660	196,375	2,023,009
1897	962,106	405,163	297,639	177,448	1,842,356
1898	219,677	88,326	894	22,992	331,889
1899	84,405	81,522	2,922	5,021	173,870
1900	32,875	147,063	2,056	3,268	185,262
1901	18,356	213,646	3,518	1,835	237,355
1902	259,531	119,242	20,962	2,415	402,150
1903	157,151	165,511	38,286	937	361,885
1904	33,263	86,006	39,295	1,175	159,739
1905	48,388	118,170	13,908	2,745	183,211
1906	37,179	126,623	31,442	3,357	198,601
1907	65,917	106,108	23,407	365	195,797
1908	83,065	55,576	53,771	414	192,826
1909 [1]	36,527	173,490	70,965	3,411	284,393
1916	105,001	381	1,325	3,770	110,477
1917	36,967		752	655	38,374
1918	51,643		661	636,703	689,007
1918 [2]	3,038		4,065	433,766	440,869
1919 (calendar year)	408,103		6,698	53,849	468,650
1920 (calendar year)	2,951,435	217,263	156,145	345,531	3,670,374
1921 (calendar year)	4,163,018	557,092	741,617	381,907	5,843,634
1922 (calendar year)	2,651,564	300,383	400,706	251,541	3,604,194
1923 (calendar year)	4,582,276	869,601	768,253	116,094	6,336,224
1924 (calendar year)	1,651,339	603,544	638,637	22,686	2,916,206

[1] From 1910 to 1915, inclusive, general imports were not officially recorded. English statistics show exports of woolen, worsted, alpaca, mohair, and cashmere yarns from the United Kingdom to the United States for specified calendar years as follows: 1910, 58,800 pounds; 1911, 36,700 pounds; 1912, 53,200 pounds; 1913, 405,800 pounds; 1914, 3,262,600 pounds; and for 1915, 864,100 pounds.

[2] July 1 to Dec. 31, 1918.

TABLE 31.—*General imports of yarns of wool, mohair, alpaca, etc., by principal ports of entry, 1891–1924*

Fiscal year (unless otherwise stated)	New York	Boston	Philadelphia	All other ports	Total for all ports
	Pounds	*Pounds*	*Pounds*	*Pounds*	*Pounds*
1891	955, 342	442, 845	462, 685	93, 772	2, 694, 643
1892	72, 102	216, 229	277, 722	80, 076	1, 267, 129
1893	791, 264	186, 336	152, 953	42, 494	1, 175, 077
1894	346, 323	36, 646	95, 569	42, 948	546, 486
1895	1, 235, 650	636, 125	382, 932	44, 139	2, 402, 846
1896	1, 264, 980	371, 935	279, 550	76, 564	2, 023, 089
1897	1, 436, 705	146, 90.	226, 086	33, 612	1, 842, 396
1898	257, 19.	5, 054	35, 967	33, 777	331, 989
1899	116, 103	2, 914	30, 830	24, 023	173, 870
1900	98, 449	2, 711	72, 627	14, 977	195, 262
1901	62, 304	3, 015	102, 386	69, 980	237, 155
1902	134, 264	96, 236	112, 718	59, 812	402, 150
1903	145, 384	5, 136	189, 673	11, 467	351, 665
1904	53, 649	1, 153	85, 267	14, 530	154, 739
1905	46, 340	4, 419	107, 178	25, 223	183, 211
1906	92, 194	1, 955	93, 455	11, 087	198, 691
1907	90, 085	1, 969	90, 367	23, 176	195, 797
1908	96, 652	612	58, 213	72, 349	192, 826
1909 [1]	215, 465	14, 262	51, 705	5, 660	284, 263
1916	76, 036	10, 965	20, 264	9, 074	116, 477
1917	25, 932	1, 144	5, 598	2, 700	35, 374
1918	124, 744	533	4, 128	551, 192	680, 607
1918 [2]	186, 670	.....	2, 760	257, 239	446, 669
1919 (calendar year)	395, 167	25, 014	46, 246	78, 217	468, 650
1920 (calendar year)	2, 105, 102	790, 131	598, 437	187, 304	3, 670, 374
1921 (calendar year)	2, 736, 799	2, 528, 990	651, 956	125, 987	5, 843, 634
1922 (calendar year)	2, 377, 679	823, 126	249, 043	156, 346	3, 604, 194
1923 (calendar year)	3, 982, 572	1, 139, 035	711, 377	503, 236	6, 336, 224
1924 (calendar year)	2, 185, 085	272, 115	328, 974	128, 432	2, 916, 206
Total	19, 983, 452	7, 467, 778	5, 286, 183	2, 644, 285	38, 277, 904

[1] Not officially reported for the years 1910 to 1915, inclusive. [2] July 1 to Dec. 31, 1918.

The above figures show that New York has always been the principal port of entry for yarns of wool, mohair, alpaca, etc.

Character of imported yarns.—Worsted yarns, of wool and of mohair, make up the bulk of imports; imports of woolen yarns are small.

The counts of worsted yarns most commonly imported in 1924 were: 1/21, 1/24, 1/26, 1/60, 2/16, 2/18, 2/20, 2/28, 2/42, 2/48, 2/60, 2/70, 2/78, 3/18, and 3/24; and of mohair and alpaca yarns 2/24, 2/28, and 2/32. The worsted yarns entered in greatest quantity were probably 1/21, 2/20, 2/48, and 2/70; mohair yarns were largely 2/28 and 2/32.

An analysis based upon 280 different importations, totaling 713,210 pounds of yarn imported through the port of New York during the first six months of 1924, gives the following results as to types and kinds: (1) Singles ranged from 13s to 100s, (2) two-ply ranged from 12s to 80s, (3) three-ply ranged from 10s to 70s, (4) four-ply ranged from 18s to 40s, (5) six-ply and eight-ply were received in two qualities for each of these types, namely, 18s, 60s, and 18s and 80s respectively. Of this 713,210 pounds of yarn, about 43 per cent was imported directly by silk manufacturers for use in the production of broad, fancy, and tie fabrics, 13 per cent was entered by plush manufacturers, the remainder was brought in by wool manufacturers and commission or importing concerns.

According to information obtained from the trade, worsted yarns imported in 1924 consisted chiefly of the following: (1) Fine yarns which require considerable labor in their production, (2) very hard twisted yarns, (3) medium fine yarns produced from low-grade wool, and (4) gassed yarns of fine quality.

According to other available information, the mills of this country are equipped to manufacture practically any kind of yarn required

by the industries, but owing to the low labor costs abroad yarns of the special types outlined above can enter the United States and be sold here below the selling prices of similar yarns made by domestic manufacturers. An unusually large percentage of labor is entailed in the production of these yarns, and the cost of making them abroad is so much less than in the United States that the domestic manufacturer can not compete with the foreign product in the American market.

Furthermore, the spinning of low grades of tops into medium fine yarns, such as 2/40s yarn from quarter-blood wool stock, is said to be uneconomical in this country. In England, and also in some of the European countries, owing to the lower wages, slower processes, the methods of manufacture employed, etc., medium fine yarns can be produced from the lower grade tops with satisfactory results, and these yarns can be imported into the United States and sold here at a profit to the foreign producer.

PRICES

Landed costs of worsted yarns invoiced at various prices.—The landed cost of an imported yarn depends upon its foreign selling price, the landing charges (buying commission, freight, insurance, etc.), and the rate of duty. For the purpose of comparing the effect of duties, levied under each of the last four tariff acts, upon the landed cost of yarns, computations were made and a tabulation of the results is shown in Table 32. Arbitrary foreign selling prices ranging from $0.65 to $1.85 a pound, were chosen as a basis for the following table which shows the total landed costs of the yarns according to the manner in which they were classified in each tariff act.

TABLE 32.—*Imported yarns of wool, camel's hair, mohair, alpaca, etc.—Effect of duties under four tariff acts, 1909–1922*

Foreign selling price per pound	Act of 1909,[1] 38½ cents plus 40 per cent ad valorem		Act of 1913,[2] 18 per cent ad valorem		Act of 1913,[3] 25 per cent ad valorem		Emergency act of May 27, 1921,[2] 45 cents plus 18 per cent ad valorem		Emergency act of May 27,1921,[3] 45 cents plus 25 per cent ad valorem		Act of 1922,[1] 36 cents plus 35 per cent ad valorem	
	Equivalent duty per pound	Total landed cost per pound[4]	Equivalent duty per pound	Total landed cost per pound[4]	Equivalent duty per pound	Total landed cost per pound[4]	Equivalent duty per pound	Total landed cost per pound[4]	Equivalent duty per pound	Total landed cost per pound[4]	Equivalent duty per pound	Total landed cost per pound[4]
$0.65	$0.645	$1.33	$0.117	$0.81	$0.162	$0.852	$0.567	$1.07	$0.612	$1.312	$0.587	$1.29
.70	.665	1.40	.126	.87	.175	.915	.576	1.33	.625	1.375	.605	1.36
.80	.705	1.54	.144	.98	.20	1.04	.594	1.44	.65	1.50	.64	1.49
.90	.745	1.68	.162	1.10	.225	1.165	.612	1.56	.675	1.625	.675	1.63
1.00	.785	1.82	.18	1.22	.25	1.29	.63	1.68	.70	1.75	.71	1.76
											36 cents plus 40 per cent ad valorem	
1.10	.825	1.96	.198	1.34	.275	1.415	.648	1.80	.725	1.875	$0.80	$1.95
1.20	.865	2.10	.216	1.46	.30	1.54	.666	1.92	.75	2.00	.84	2.09
1.30	.905	2.24	.234	1.57	.325	1.665	.684	2.04	.775	2.125	.88	2.23
1.40	.945	2.38	.252	1.69	.35	1.79	.702	2.15	.80	2.25	.92	2.37
1.50	.985	2.52	.27	1.81	.375	1.915	.72	2.27	.825	2.375	.96	2.51
1.75	1.085	2.87	.315	2.11	.437	2.227	.765	2.57	.887	2.687	1.06	2.86
1.85	1.125	3.01	.333	2.22	.462	2.352	.783	2.68	.912	2.812	1.10	3.00

[1] Yarns of wool, camel's hair, mohair, alpaca, etc.
[2] Yarns of wool or camel's hair.
[3] Yarns of mohair, alpaca, etc.
[4] Includes buying commission, insurance, and freight, which has been added for different years as follows: 3 cents for 1909, 4 cents for 1913, and 5 cents for the emergency act and the act of 1922.

Comparison of United States prices of imported and domestic worsted yarns.—The kinds of English and American worsted yarns selected for price comparisons are given below. Column B of each type shows the quality of top used in making the count of yarn listed in column A.

TABLE 33.—*Comparable English and American worsted yarns*

English		American	
A	B	A	B
Yarn number	Quality of top used	Yarn number	Quality of top used
2/60s	70s	2/60s	70s.
2/48s	64s	2/50s	Fine.
2/40s	60s	2/40s	½ blood staple.
2/32s	60s	2/32s	½ blood.
2/36s	58s	2/36s	½ blood staple.
2/20s	56s	2/20s	⅝ blood.
2/24s	44s	2/24s	Low ¼ blood.

Table 34 shows the actual selling price per pound of English yarns in England, their probable landed cost and selling price in this country, and the price at which comparable United States yarns were sold during the months of May, 1914, May, 1924, and February, 1925.

TABLE 34.—*Approximate selling price per pound in the United States of English and comparable American worsted yarns, during May, 1914, May, 1924, and February, 1925*

English yarn	Year and month	Selling price in England[1]	United States duty	Landing charges[2]	Total landed cost of English yarn in United States	Probable selling price of English yarn in United States[3]	Selling price of comparable United States yarn[4]
2/60s	May, 1914	$0.87	$0.157	$0.05	$1.07	$1.12	$1.15
	May, 1924	1.82	1.088	.05	2.96	3.11	2.85
	Feb. 1925	2.10	1.20	.05	3.35	3.52	3.50
2/48s	May, 1914	.81	.146	.05	1.01	1.06	1.02
	May, 1924	1.55	.98	.05	2.58	2.71	2.35
	Feb. 1925	1.82	1.088	.05	2.96	3.11	2.75
2/40s	May, 1914	.74	.133	.05	.92	.97	.92
	May, 1924	1.46	.944	.05	2.45	2.57	2.15
	Feb. 1925	1.68	1.032	.05	2.76	2.90	2.40
2/32s	May, 1914	.72	.130	.05	.90	.94	.87
	May, 1924	1.35	.90	.05	2.30	2.41	2.05
	Feb. 1925	1.60	1.00	.05	2.65	2.78	2.30
2/36s	May, 1914	.66	.119	.05	.83	.87	.80
	May, 1924	1.26	.864	.05	2.17	2.28	1.80
	Feb. 1925	1.40	.92	.05	2.37	2.49	2.12
2/20s	May, 1914	.57	.104	.05	.72	.76	.75
	May, 1924	1.09	.796	.05	1.94	2.04	1.65
	Feb. 1925	1.26	.864	.05	2.17	2.28	1.95
2/24s	May, 1914	.44	.079	.05	.57	.60	.65
	May, 1924	.67	.594	.05	1.31	1.37	1.35
	Feb. 1925	.84	.654	.05	1.54	1.62	1.45

[1] Prices obtained from Wool Record and Textile World and N. B. K. Brooks, of Boston, Mass. The English prices were converted into United States currency at par for 1914; for 1924, at the rate of exchange on May 15, and for 1925, at the rate of exchange on Feb. 5.
[2] Includes freight, insurance, and commission charges.
[3] Includes 5 per cent on landed cost for importer's overhead and profit.
[4] Prices obtained from American Wool and Cotton Reporter.

The figures in the previous table tend to show that the United Kingdom can compete on the American market only in certain kinds of yarn, in so far as prices are concerned, but that the United States can not compete with the United Kingdom in the world markets. When domestic mills buy direct from foreign sources, the total landed cost of English yarns must be the basis of comparison with American selling prices.

A comparison of the domestic and English worsted-yarn prices quoted in Table 34 shows that the selling price in the United States was considerably higher than the selling price of a comparable English yarn in England for the dates mentioned in 1914, 1924, and 1925. The higher selling prices in the two countries in 1924 and 1925, as compared with 1914, were due primarily to the higher prices of raw wool and tops, and to the greater manufacturing costs, including higher wages based on increased living costs. The variation in the rate of increase for different qualities of yarns was caused mainly by the quantity available, the demand, and the price variation in the particular grades of raw wool and tops required. Table 35 shows that the percentage increase in the selling prices in 1924 over 1914 for English yarns in England and comparable American yarns in the United States was as follows:

TABLE 35.—*Increase in selling prices of yarns, 1914–1924*

Type of yarn	English yarn in England	American yarn in United States	Difference in rate of increase
	Per cent increase	*Per cent increase*	*Per cent*
2/60s	109.2	147.8	38.6
2/48s	91.3	130.4	39.1
2/40s	97.3	133.7	36.4
2/32s	87.5	135.6	48.1
2/36s	90.9	125.0	34.1
2/20s	91.2	120.0	28.8
2/24s	52.3	107.7	55.4
Average	88.5	128.6	40.1

The fact that the domestic product can not compete with the English product in foreign markets is emphasized by the size of our domestic exports, which for the year 1924 amounted to only 98,707 pounds.

Trend of prices, 1913–1925.—Table 36 gives the range of market prices of four standard domestic worsted yarns as quoted on January 1 of each year since 1913, and a comparison with the index number of all commodities.

TABLE 36.—*Comparison of wholesale prices per pound of four standard domestic worsted weaving yarns, 1913–1925*

January 1—	Prices per pound of domestic yarns [1]						Index number of all commodities
	Number and quality				Average price	Relative price (1913 basis)	
	2/24s, ¼ blood	2/36s, ¼ blood	2/40s, ½ blood	2/50s, fine medium			
1913	$0.75	$0.95	$1.00	$1.15	$0.96	100	100
1914	.60	.80	.90	.95	.81	84	98
1915	.70	.90	1.00	1.10	.93	97	101
1916	.90	1.00	1.25	1.35	1.13	118	127
1917	1.15	1.45	1.75	1.90	1.56	163	177
1918	1.85	2.45	2.85	3.15	2.58	269	194
1919	1.95	2.30	2.70	3.00	2.49	259	206
1920	2.20	2.65	4.15	5.25	3.56	371	226
1921	1.10	1.70	1.85	2.10	1.69	176	147
1922	1.05	1.35	1.60	1.90	1.48	154	149
1923	1.60	2.10	2.45	2.75	2.23	232	154
1924	1.50	1.95	2.25	2.55	2.06	215	151
1925	1.65	2.00	2.40	2.75	2.20	229	160

[1] Wholesale prices of worsted yarns were obtained from bulletins of the National Association of Wool Manufacturers.
[2] Index numbers of all commodities as published by the Bureau of Labor Statistics, United States Department of Labor.

The relative price figures for worsted yarns show that on January 1 they were lower than the general market level for all commodities in 1914, 1915, 1916, and 1917, considerably higher in 1918, 1919, and 1920, slightly above in 1921 and 1922, but much higher in 1923, 1924, and 1925. On January 1, 1925, the average price of the four yarns cited above was 2.29 times the price on January 1, 1913. The wide variation in yarn prices reflects the great fluctuations throughout the world in the prices of raw wool.

The extent to which the above yarn prices are affected by raw wool coming into this country free of duty or dutiable can not be stated. However, in 1913 raw wool was dutiable; from January 1, 1914, to May 28, 1921, it was duty free; and since the last-mentioned date it has been dutiable.

COMPETITIVE CONDITIONS

The costs of producing worsted yarns are lower in England and continental Europe than in the United States, but as to the exact relation of production costs in the various countries there is little available information.

In England and upon the Continent the worsted-yarn business is largely divided between the yarn merchant, who owns the combed wool or tops, and the commission spinner, who spins the worsted yarns for a fixed fee per quantity for the yarn merchant. In the United States a greater percentage of these yarns are made in the establishments in which they are later consumed in the manufacture of cloth than is the case abroad. The production of worsted yarns for sale is therefore relatively larger abroad than in the United States, although according to the census of 1919 worsted yarns for sale in this country amounted to about 50 per cent of the total quantity manufactured.

Imports during the fiscal year 1914 were less than 1 per cent of the total domestic production of woolen and worsted yarns; in the calendar year 1919 they were less than one-tenth of 1 per cent. Practically all imports are worsted yarns (this includes mohair yarns), and may therefore be compared with domestic production. In 1914 imports constituted 1.8 per cent, and in 1919 only 0.26 per cent of the domestic production of worsted yarn. Taking the 1919 domestic production as a basis for computation, the 1923 imports of worsted yarns constituted about 4 per cent of the probable domestic production, and 1.5 per cent of the total woolen and worsted yarns made in the United States. With a total domestic production in 1923 of probably 400,000,000 pounds of woolen, worsted, mohair, alpaca, and other similar yarns mentioned herein, and 6,336,224 pounds of these yarns imported during the year, it is evident that there is relatively little foreign competition on the American market. Imports in 1924 totaled 2,916,206 pounds, which was less than half the quantity imported in 1923.

TARIFF HISTORY

Under the provisions of the tariff act of 1890, all yarns made wholly or in part of wool, or of hair of the camel, goat, alpaca, or other like animals, were dutiable under a combination of specific and ad valorem rates. This compound rate was applied to three classifications of yarn values, namely, (*a*) not more than 30 cents per pound; (*b*) more than 30 cents but not more than 40 cents per pound; (*c*) more than 40 cents per pound. The actual and computed ad valorem rate averaged 105.11 per cent per annum for the entire period of this act. This equivalent ad valorem duty was higher than that applied under any subsequent act. The average annual imports during the life of the act of 1890 were 862,815 pounds. valued at $527,296.

In the act of 1894 the descriptive wording was the same as in the previous act, but the rates were made ad valorem only and were applied to two classifications of yarn values, namely, (*a*) not more than 40 cents per pound, and (*b*) more than 40 cents per pound. The equivalent ad valorem duty averaged 38.09 per cent per year during the life of this act, this being the second lowest for the last 34 years. Imports immediately increased and the average annual imports for the period during which this act was in force was 2,559,350 pounds, valued at $1,242,955.

In the act of 1897 the rates were changed back to specific and ad valorem and were applied to two classifications of yarn values, namely, (*a*) not more than 30 cents per pound, and (*b*) more than 30 cents per pound. During the period of this act the equivalent ad valorem duty averaged 93.54 per cent per year, and the average annual imports were only 239,002 pounds, valued at $157,620.

The provisions of the act of 1909 were identical with those of 1897, except that the ad valorem rate for yarns valued at not more than 30 cents per pound was reduced 5 per cent. Thus, the equivalent ad valorem duty was slightly lowered to an annual average of 86.12 per cent. The yearly average imports during the life of this act were 197,018 pounds, valued at $164,141, the lowest ever recorded.

Under the act of 1913 straight ad valorem rates were again applied. and yarns were classified into two divisions: (1) Those made wholly

or in chief value of wool or of camel's hair, and (2) those made of the hair of the Angora goat, alpaca, and other like animals. The rates of duty were 18 per cent and 25 per cent, respectively, for the two classifications. During the period of 2,704 days, prior to the passage of the emergency act of May 27, 1921, the equivalent ad valorem duty for the two types of yarns was 19.36 per cent per annum. The emergency tariff act was in effect 482 days, from May 28, 1921, to September 21, 1922, inclusive, and under this law a duty of 45 cents a pound was imposed in addition to the previous ad valorem duties. During the 482 days the total yarns imported amounted to 4,733,297 pounds, valued at $5,275,811, and the equivalent ad valorem duty was 59.09 per cent. During the 3,186 days covering the entire period of the act of 1913, both before and after its modification by the emergency tariff act, the equivalent ad valorem duty for all yarns under this classification averaged 27.69 per cent.

The act of 1922 provides for yarns made wholly or in chief value of wool or of hair of the camel, goat, alpaca, or other like animals under specific and ad valorem rates based upon value as follows: (1) Valued at not more than 30 cents per pound, (2) valued at more than 30 cents and not more than $1 per pound, and (3) valued at more than $1 per pound. Although the equivalent ad valorem duty in 1923 was 67.34 per cent, importations for that year were the largest of any one year in history, amounting to 5,617,321 pounds, valued at $7,238,370. In 1924, however, there was a falling off to 3,120,690 pounds, valued at $4,416,431; the equivalent ad valorem duty was 65.21 per cent.

The figures given in the following table show imports for consumption in 1923 and 1924 of the yarns described herein; the bulk had a foreign value of more than $1 per pound, a small percentage had a foreign value of more than 30 cents and not more than $1 per pound, while practically none was valued at 30 cents or less a pound.

TABLE 37.—*Imports for consumption of yarns under each value classification, 1923 and 1924*

Yarns valued at—	Quantity in pounds		Per cent of total	
	1923	1924	1923	1924
Not more than 30 cents per pound	208	21	0.004	0.001
More than 30 cents but not more than $1 per pound	1,075,862	216,677	19.152	6.943
More than $1 per pound	4,541,251	2,903,992	80.844	93.056
Total	5,617,321	3,120,690	100.00	100.00

The rates of duty imposed by the tariff act of 1922 are higher than those of the acts of 1894 and 1913, but lower than those of the acts of 1890, 1897, and 1909.

During the period that each of the last six tariff acts remained in effect the average yearly imports for consumption fluctuated to a considerable extent. For instance, under the act of 1890 the average per year was 862,815 pounds; under the act of 1894, 2,559,350 pounds; under the act of 1897, 239,002 pounds; under the act of 1909, 197,018 pounds; under the act of 1913, 2,413,012 pounds. In 1923, the first full year under the act of 1922, imports were 5,617,321 pounds, and in 1924, 3,120,690 pounds.

Rates of duty.—The rates of duty, classified according to the different tariff acts, 1883–1922, are given in the accompanying tabulation.

TABLE 38.—*Yarns of wool or hair—Rates of duty*

Act of—	Par.	Tariff classification or description	Rate of duty
1883	363	* * * woolen and worsted yarns, and all manufactures of every description, composed wholly or in part of worsted, the hair of the alpaca, goat, or other animals (except such as are composed in part of wool), not specially enumerated or provided for in this act, valued at—	
		Not exceeding 30 cents per pound	10 cents per pound and 35 per centum ad valorem.
		Above 30 cents per pound and not exceeding 40 cents per pound.	12 cents per pound and 35 per centum ad valorem.
		Above 40 cents per pound and not exceeding 60 cents per pound.	18 cents per pound and 35 per centum ad valorem.
		Above 60 cents per pound and not exceeding 80 cents per pound.	24 cents per pound and 35 per centum ad valorem.
		Above 80 cents per pound	35 cents per pound and 40 per centum ad valorem.
1890	391	On woolen and worsted yarns made wholly or in part of wool, worsted, the hair of the camel, goat, alpaca, or other animals, valued at—	
		Not more than 30 cents per pound	27½ cents per pound and 35 per centum ad valorem.
		More than 30 cents and not more than 40 cents per pound	33 cents per pound and 35 per centum ad valorem.
		More than 40 cents per pound	38½ cents per pound and 40 per centum ad valorem.
1894	280	On woolen and worsted yarns made wholly or in part of wool, worsted, the hair of the camel, goat, alpaca, or other animals, valued at—	
		Not more than 40 cents per pound	30 per centum ad valorem.
		More than 40 cents per pound	40 per centum ad valorem.
1897	365	On yarns made wholly or in part of wool [1] valued at—	
		Not more than 30 cents per pound	27½ cents per pound and 40 per centum ad valorem.
		More than 30 cents per pound	38½ cents per pound and 40 per centum ad valorem.
1909	377	On yarns made wholly or in part of wool [2] valued at—	
		Not more than 30 cents per pound	27½ cents per pound and 35 per centum ad valorem.
		More than 30 cents per pound	38½ cents per pound and 40 per centum ad valorem.
1913	287	Yarns made wholly or in chief value of wool [3]	18 per centum ad valorem.
	307	Yarns made of the hair of the Angora goat, alpaca, and other like animals.	25 per centum ad valorem.
1921 [4]	19	* * * manufactures of which wool or hair * * * is the component materials of chief value.	45 cents per pound in addition to the rates of duty imposed thereon by existing law.
1922	1107	Yarns made wholly or in chief value of wool [5] valued at—	
		Not more than 30 cents per pound	24 cents per pound and 30 per centum ad valorem.
		More than 30 cents and not more than $1 per pound	36 cents per pound and 35 per centum ad valorem.
		More than $1 per pound	36 cents per pound and 40 per centum ad valorem.

[1] Including hair of the sheep, camel, goat, alpaca, or other like animals, by virtue of paragraph 383.
[2] Including hair of the sheep, camel, goat, alpaca, or other like animals by virtue of paragraph 395.
[3] Including wool or hair of sheep, camel, or other like animals by virtue of paragraph 304.
[4] Emergency tariff act, May 27.
[5] Hair of the camel, goat, alpaca or other like animals.

COURT AND TREASURY DECISIONS

Yarn made of hair of the common goat was held dutiable as wool yarn by similitude under paragraph 377 of the tariff act of 1909, rather than as a nonenumerated manufactured article. (Abstract 25370, T. D. 31524, of 1911.) Merchandise described as wool and silk yarn, which was imported with incomplete embroidered cushion covers, was classified by the collector as embroidered articles under paragraph 358 of the act of 1913. The Board of General Appraisers held that the yarn and covers should not be treated as an entirety and sustained the claim in the protest that the wool yarn was dutiable under paragraph 287 and the silk yarn under paragraph 313 of the act of 1913. (G. A. 8105, T. D. 37402, of 1917.)

Roving yarn, slightly twisted, which was capable of further twisting or elongation and which had not been on the spinning frame, was held dutiable as roving or roping under paragraph 286, rather than as yarn under paragraph 287. (G. A. 7958, T. D. 36675, of 1916.) Under instructions from the Treasury Department, however, merchandise of this character was assessed as wool yarn under paragraph 287 with a view to the presentation of a new case. (T. D. 37148, of 1917.)

Angora rabbit-hair yarn, commercially known as Angora wool yarn, was held not dutiable as a manufacture of fur under paragraph 348 of the act of 1913. The court laid down the following principles: Such yarn is more specifically described in paragraph 307 as "yarns made of the hair of the Angora goat, alpaca, and other like animals" than by the definition of wool in paragraph 304, "wool or hair of the sheep, camel, or other like animals," and is dutiable accordingly. The making of yarns is not, properly speaking, a fur use and the yarn made of hair can not be a manufacture of fur. Angora rabbit hair resembles that of the Angora goat or alpaca more nearly than it does that of the sheep or camel. Hair which is so short that it is commercially unfit to be spun into yarn or for the making of textiles and is chiefly employed in the making of furs or fur garments or for other fur uses, is a kind of hair which is known as "fur," though it be taken from the back of a sheep. Hair which possesses all of the characteristics of fur, but is so long and of such quality that it can be spun into yarn and converted into cloth and is chiefly used for that purpose, should be classified as a wool or as hair other than fur. "Other like animals" used in paragraphs 304 and 307 with reference to wool and hair regarded similarity in the hair and not in the animals themselves. (Bloomingdale Bros. *v.* United States, 8 Ct. Cust. Appls., 104, of 1917.)

Yarn made from the hair of the Angora rabbit was held not covered by paragraph 19 of the emergency tariff act of 1921 but remained dutiable under paragraph 307 of the act of 1913. (G. A. 8694, T. D 39833 of 1923.)

APPENDIX

Hours and Wages

The number of hours of work for operators in the more important occupations preliminary to weaving, in the domestic wool-manufacturing industry, has been substantially reduced in the last few years. In 1920 mills employing the bulk of the labor in these occupations adopted the 48-hour schedule in use to-day. Table 39 presents a tabulation of figures furnished by the Bureau of Labor Statistics, which shows the percentage of employees and their full-time hours per week in various kinds of work for specified years. The figures given were obtained from 47 representative establishments in 1913 located in 9 States, and 67 such establishments in 1922 located in 9 States, in which the manufacture of woolen and worsted goods is an important industry. These figures show that in 1913, 55.1 per cent of the full-time male employees in such mills worked 54 hours per week and 44.9 per cent worked more than 54 hours; whereas in 1922, 88.1 per cent worked 48 or fewer hours per week and 11.9 per cent more than 48 hours. In 1913 approximately 44 per cent of the full-time female employees worked 54 hours per week, and 56 per cent worked more than 54 hours; in 1922, 84.8 per cent worked 48 or fewer hours per week and 15.2 per cent between 48 and 54 hours.

Table 39.—*Hours of labor in woolen and worsted industries, 1913 and 1922* [1]

Occupation and sex	Year	Percentage of employees whose full-time hours per week were—					
		Under 48 hours	48 hours	Over 48 hours and under 54 hours	54 hours	Over 54 hours and under 57 hours	57 hours and over
		Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Wool sorters:							
Male	1913	----------	----------	----------	66	21	14
	1922	----------	94	----------	6	----------	----------
Female	1922	----------	100	----------	----------	----------	----------
Wool washer tenders: Male	1922	----------	84	1	9	1	5
Picker tenders: Male	1922	----------	82	5	9	----------	4
Card tenders:							
Male	1913	----------	----------	----------	32	24	44
	1922	----------	81	4	9	----------	6
Female	1922	----------	97	3	----------	----------	----------
Card strippers: Male	1913	----------	----------	----------	27	23	50
	1922	----------	84	4	8	----------	4
Card grinders: Male	1922	----------	89	7	4	----------	----------
Gill box tenders:							
Male	1922	----------	96	----------	4	----------	----------
Female	1922	----------	81	----------	19	----------	----------
Comber tenders:							
Male	1913	----------	----------	----------	77	6	17
	1922	----------	98	----------	2	----------	----------
Female	1913	----------	----------	----------	1	76	23
	1922	----------	71	----------	2 [1]	----------	----------

[1] Bulletin of the United States Bureau of Labor Statistics, Serial No. 327, May, 1923; figures for 1924 are not available.

TABLE 39.—*Hours of labor in woolen and worsted industries, 1913 and 1922*—Con.

Occupation and sex	Year	Percentage of employees whose full-time hours per week were—					
		Under 48 hours	48 hours	Over 48 hours and under 54 hours	54 hours	Over 54 hours and under 57 hours	57 hours and over
Drawing-frame tenders:		*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
Male	1922	----------	98	----------	2	----------	----------
Female	1922	----------	91	----------	9	----------	----------
Spinner, mule: Male	1913	----------	----------	----------	30	21	49
	1922	----------	82	4	11	----------	3
Spinner, frame:							
Male	1913	----------	----------	----------	100	----------	----------
	1922	----------	100	----------	----------	----------	----------
Female	1913	----------	----------	----------	43	34	23
	1922	2	90	----------	8	----------	----------
Doffers:							
Male	1922	30	70	----------	----------	----------	----------
Female	1922	19	68	----------	13	----------	----------
Twister tenders: Female	1913	----------	----------	----------	45	38	17
	1922	----------	78	----------	22	----------	----------
Spooler tenders: Female	1922	----------	87	2	11	----------	----------

NOTE.—Where 1913 figures are not given they were not recorded in the statistics.

Table 40 is inserted to show particularly the relation of the wages, as published by the Bureau of Labor Statistics, paid in various years to employees in wool manufacture in the chief operations preliminary to weaving. It includes, in addition to the earnings per hour and per week, other data reported to that bureau by wool-manufacturing establishments—namely, the number of such establishments; the number of employees, classified according to occupation and sex; and the average full-time hours per week. The mills covered include many of the most important and representative establishments in the States in which woolen and worsted manufacturing is a prominent industry. Considering only occupations for which wages were recorded in both years, these figures show for male employees an average wage per hour of $0.187 in 1913 and of $0.580 in 1924, an increase of 210 per cent in 1924 over 1913. For female employees the average wage was $0.131 per hour in 1913 as compared with $0.418 in 1924, an increase of 219 per cent in 1924 over 1913.

Considering all occupations for which wages were recorded in 1924, the average wages per hour in that year were $0.521 for males and $0.42 for females. Taking the last two figures as a basis for calculation, male employees received $25.01 and female employees $20.16 for a 48-hour week.

TABLE 40.—*Number of establishments, employees, and wages by specified occupations, in woolen and worsted industries, 1913–1924*[1]

Occupation and sex	Year	Number of establishments	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week
Wool sorters:						
Male	1913	19	246	55.0	$0.281	$15.43
	1914	15	381	54.2	.276	14.97
	1918	20	538	54.4	.460	24.94
	1920	22	423	48.1	.871	41.90
	1922	17	358	48.4	.710	34.36
	1924	19	359	49.5	.776	38.41
Female	1922	3	37	48.0	.702	33.70
	1924	5	65	48.2	.608	29.31
Wool washer tenders: Male	1920	20	113	48.8	.583	28.45
	1922	23	93	49.2	.446	21.94
	1924	20	119	49.3	.513	25.29
Picker tenders: Male	1920	41	277	48.3	.530	25.60
	1922	43	276	49.3	.428	21.10
	1924	45	275	49.3	.471	23.22
Card tenders:						
Male	1913	40	329	56.3	.142	8.01
	1914	41	398	56.1	.147	8.26
	1918	47	599	54.8	.287	15.75
	1920	43	444	48.4	.517	25.02
	1922	46	514	49.5	.405	20.05
	1924	47	528	49.4	.473	23.37
Female	1920	11	103	48.3	.437	21.11
	1922	10	109	48.2	.351	16.92
	1924	12	94	48.0	.409	19.63
Card strippers: Male	1913	42	236	56.5	.168	9.46
	1914	43	250	55.7	.169	9.44
	1918	48	359	54.8	.324	17.77
	1920	45	292	48.2	.570	27.47
	1922	46	311	49.5	.433	21.43
	1924	49	368	50.6	.506	25.00
Card grinders: Male	1922	12	28	48.4	.491	23.76
	1924	15	37	48.8	.602	29.38
Gill box tenders:						
Male	1920	8	130	49.8	.502	25.00
	1922	8	288	48.3	.363	17.53
	1924	8	343	49.9	.439	21.91
Female	1920	15	383	48.4	.442	21.39
	1922	15	413	49.1	.339	16.64
	1924	14	435	49.4	.382	18.87
Comber tenders:						
Male	1913	9	115	54.8	.156	8.51
	1914	6	228	55.8	.161	9.00
	1918	9	248	55.8	.314	17.49
	1920	10	162	48.9	.552	26.99
	1922	11	209	48.1	.435	20.92
	1924	7	212	49.6	.552	25.89
Female	1913	7	163	56.1	.117	6.57
	1914	6	162	54.8	.119	6.52
	1918	12	328	52.8	.258	13.59
	1920	12	155	48.7	.478	23.28
	1922	10	100	49.7	.385	19.13
	1924	10	114	49.2	.418	20.57
Drawing-frame tenders:						
Male	1918	6	193	54.1	.264	14.81
	1920	6	51	48.0	.501	24.05
	1922	8	189	48.1	.378	18.18
	1924	8	263	49.2	.439	21.60
Female	1918	15	1,760	52.9	.250	13.24
	1920	16	1,758	48.3	.445	21.49
	1922	17	1,615	48.5	.349	16.93
	1924	15	1,885	48.9	.397	19.41
Spinners, mule: Male	1913	42	828	56.5	.239	13.45
	1914	42	897	56.0	.249	13.88
	1918	46	1,431	54.9	.499	27.42
	1920	46	960	48.2	.816	39.33
	1922	44	1,119	49.2	.670	32.96
	1924	47	1,290	48.9	.755	36.92

[1] Source: Bulletin of the United States Bureau of Labor Statistics, Serial No. 327, May, 1923, and Monthly Labor Review, September, 1924.

TABLE 40.—*Number of establishments, employees, and wages by specified occupations, in woolen and worsted industries, 1913–1924*—Continued

Occupation and sex	Year	Number of establishments	Number of employees	Average full-time hours per week	Average earnings per hour	Average full-time earnings per week
Spinner, frame:						
Male	1913	3	115	54.0	$0.136	$7.33
	1914	3	282	53.9	.145	7.80
	1918	5	161	53.0	.316	16.74
	1920	4	49	48.0	.558	26.78
	1922	4	45	48.0	.357	17.14
	1924	3	46	50.0	.421	21.05
Female	1913	10	751	55.5	.140	7.78
	1914	9	970	54.2	.147	7.99
	1918	15	1,330	52.4	.278	14.62
	1920	14	1,026	48.2	.481	23.18
	1922	15	972	48.4	.345	16.70
	1924	14	1,106	48.9	.417	20.39
Doffers:						
Male	1918	5	138	50.5	.266	13.58
	1920	6	108	46.3	.497	23.01
	1922	5	165	47.0	.299	14.05
	1924	7	214	49.9	.301	15.02
Female	1918	12	829	48.6	.203	9.85
	1920	14	561	46.7	.352	16.44
	1922	14	619	48.1	.275	13.23
	1924	10	566	48.1	.315	15.15
Twister tenders: Female	1913	12	598	55.4	.135	7.50
	1914	11	884	54.3	.144	7.81
	1918	24	802	53.9	.256	13.80
	1920	34	1,043	48.3	.457	22.07
	1922	40	892	49.3	.352	17.35
	1924	38	914	49.3	.418	20.61
Spooler tenders: Female	1918	56	1,514	53.6	.270	14.51
	1920	55	1,474	48.2	.458	22.08
	1922	59	1,247	48.7	.383	18.65
	1924	64	1,228	48.6	.419	20.36

Wages in the United States and foreign countries.—It was not possible to obtain the wages paid in the important foreign countries for each of the occupations shown in Table 40, but Table 41 shows the great difference in wages paid to employees in this country and abroad for some of the occupations in wool manufacturing. The figures were obtained from several reliable sources, and the comparisons given are considered approximately correct for July, 1924, based on a 48-hour week.

TABLE 41.—*Wage comparisons in the United States and in the principal foreign woolen and worsted manufacturing countries,* [1] *July, 1924*

[Wages per week]

Occupation and sex	United States	England	France	Germany [2]
MALE				
Wool sorters	$37.24	$14.82	$8.00	----------
Wool-washer tenders	24.62	11.93	5.40	----------
Card tenders	22.70	12.50	5.83	----------
Comber tenders	25.06	9.50	5.18	----------
Spinners	36.24	----------	----------	6.00
FEMALE				
Drawing-frame tenders	19.06	6.42	4.54	----------
Spinners, frame	20.02	5.67	4.32	4.75
Twister tenders	20.06	6.22	4.75	----------
Total average	25.62	9.58	5.43	5.37

[1] The sources of the wage figures were: Bureau of Labor Statistics, National Association of Wool Manufacturers, and American consul at Dresden, Germany.
[2] Only two wage rates were available.

TABLE 42.—*Commission charges for wool combing in England* [1] *and in the United States, 1914–1924*

[Charges in cents per pound]

Type of wool and proportion of tops to noil	1914 (July 1)		1919 (Sept. 1)		1921 (July 18)		1923 (Aug. 27)		1924 (June 2)	
	English rate	American rate	English rate	American rate	English rate	American rate	English rate	American rate	English rate	American rate
TEARING										
Merinos, 5 to 1 and over	$0.0456	$0.065	$0.127	$0.18	$0.0938	$0.16	$0.0995	$0.17	$0.103	$0.17
Merinos, 4 and under 5 to 1	.0507	.0725	.135	.19	.1013	.17	.109	.18	.112	.18
Merinos, 3 and under 4 to 1	.0558	.075	.144	.20	.1088	.18	.1184	.19	.121	.19
56s, 7 to 1 and over	.038	.055	.096	.165	.0788	.145	.0853	.155	.088	.155
56s, 5 and under 7 to 1	.038	.06	.100	.17	.0863	.15	.0948	.16	.097	.16
50s, 7 to 1 and over	.0355	.0525	.092	.1475	.0713	.135	.0758	.14	.079	.14
50s, 5 and under 7 to 1	.038	.055	.096	.1525	.0788	.14	.0853	.145	.088	.145
40s, 8 to 1 and over	.0304	.045	.083	.13	.0638	.10	.0711	.105	.072	.105
40s, 6 and under 8 to 1	.033	.050	.087	.1325	.0713	.105	.0805	.11	.081	.11
Preparing, 32s to 36s	.0253	.04	.070	.125	.0563	.09	.0616	.09	.063	.09
Average	.0390	.0570	.1030	.1592	.0810	.138	.0881	.144	.095	.144

[1] The dates given are those on which changes were made in the uniform lists published by Wool Combers, Ltd. The English charges were converted into United States currency at the prevailing rates of exchange.

Combing charges in the United States have always been considerably higher than those in England, i. e., in 1914, 46 per cent; 1919, 55 per cent; 1921, 70 per cent; 1923, 63 per cent; 1924, 52 per cent, and in 1925, 67 per cent.

ACTIVITY OF WOOLEN AND WORSTED SPINDLES

Table 43 gives a detailed tabulation of the active woolen and worsted spindles by months, as compiled by the Census Bureau from 1919 to May, 1925, inclusive. A summary of the yearly averages is shown in Table 22 (p. 36).

TABLE 43.—*Percentage activity of woolen and worsted spindles—Monthly and yearly averages, 1919–1925*

	Active spinning spindles			Active spinning spindles	
	Woolen	Worsted		Woolen	Worsted
1919	*Per cent*	*Per cent*	1920	*Per cent*	*Per cent*
January	58.9	51.4	January	92.9	92.1
February	58.2	47.3	February	89.7	88.3
March	71.6	63.9	March	90.5	93.0
April	83.2	74.2	April	88.5	93.0
May	84.8	78.9	May	76.9	85.8
June	91.1	86.5	June	58.0	67.3
July	91.1	89.1	July	54.5	62.4
August	92.1	87.2	August	55.4	62.9
September	92.3	92.8	September	56.8	74.0
October	93.3	93.3	October	57.2	65.2
November	91.6	93.8	November	48.3	57.3
December	90.9	89.8	December	40.6	49.2
Yearly average	83.3	79.0	Yearly average	67.4	74.1

TABLE 43.—*Percentage activity of woolen and worsted spindles—Monthly and yearly averages, 1919–1925*—Continued

	Active spinning spindles	
	Woolen	Worsted
1921	*Per cent*	*Per cent*
January	41.1	57.0
February	52.8	67.0
March	67.7	78.2
April	76.2	87.1
May	79.4	89.9
June	79.5	90.2
July	78.1	86.7
August	77.6	90.5
September	77.6	91.4
October	79.5	92.2
November	77.6	89.8
December	74.9	87.0
Yearly average	71.8	83.9
1922		
January	73.0	85.7
February	79.9	85.6
March	82.5	74.7
April	82.7	61.6
May	85.5	66.7
June	85.7	68.1
July	83.7	68.0
August	82.9	74.8
September	84.7	81.4
October	84.4	89.1
November	84.4	90.0
December	84.5	89.2
Yearly average	82.8	77.9
1923		
January	84.8	89.5
February	87.0	91.3
March	90.0	93.7
April	90.0	94.3
May	89.6	94.1
June	87.1	90.0
July	86.3	90.5
August	84.1	84.5
September	83.9	83.3
October	83.9	83.9
November	82.1	81.6
December	80.6	76.9
Yearly average	85.8	87.8
1924		
January	80.9	73.3
February	82.4	77.6
March	84.4	78.0
April	82.2	71.9
May	79.3	64.6
June	78.0	58.4
July	74.0	54.8
August	72.9	58.2
September	79.3	66.5
October	83.3	75.4
November	83.0	77.3
December	84.0	75.3
Yearly average	80.3	69.3
1925		
January	81.3	74.5
February	80.6	73.6
March	83.3	67.5
April	81.2	63.5
May	80.4	59.7
June	79.0	58.6

REGAIN

Wool has a greater affinity for moisture than any other fiber. Even under ordinary atmospheric conditions, wool tops and wool yarns will readily increase or decrease in weight, according to the temperature and the relative humidity of the air by which they are surrounded. The increase in weight, when a bone-dry fiber is placed in an atmosphere containing moisture, is known as "regain," and the amount of moisture so absorbed is an important factor in buying and selling tops and yarns by weight.

In England and France there are official conditioning establishments to which wool tops, wool yarns, etc., can be sent to determine the moisture content. Several years ago the United States Conditioning & Testing Co. was established in New York City for the purpose of making accurate and impartial tests of raw and manufactured textile materials and, although it was originally established for the testing of silk, to-day its laboratories are equipped to do all kinds of general textile testing, and such tests will be made for anyone upon application. There are other institutions which have facilities for making any practical test of wool and wool products, and some are equipped to make the most intricate determinations of these commodities. Such establishments are the United States

Bureau of Standards, the Massachusetts Institute of Technology, the Lowell Textile School, etc.

The results of conditioning will show the marketable weight of the material; and in the foreign countries cited above, wool tops and yarns are usually bought and sold on the basis of standard regains.

The standard regains adopted by the Bradford Conditioning House, England, for wool tops and wool yarns are as follows:

	Per cent
Wool tops, oil-combed	19
Wool tops, dry-combed	18¼
Wool yarns	18¼

Many years ago the general impression of top makers and traders in tops was that, owing to our drier climate, a difference of from 2 to 3 per cent in regain could be expected between this country and England or continental Europe. After many years of scientific research it was found that for Lawrence, Mass. and vicinity the average natural condition of tops would be about 15 per cent regain. Most of the trade in tops in this country has accepted a 15 per cent regain as the standard. Practically all of the yarn trade, however, is carried on without consideration of a standard regain as a basis for the correct commercial weight.

A small percentage variation in the weight of a transaction involving 10,000 or 50,000 pounds may mean a considerable loss to the buyer or seller if he fails to take into account the moisture content. This is especially true when materials such as these are sold for 75 cents to more than $1.75 per pound. The establishment of regain standards for these commodities in the United States is therefore of considerable importance.

While it is desirable that the allowance for moisture should be as near the actual regain as possible, a variation makes no real difference as long as both parties to a transaction understand the basis on which they are dealing. The commercial importance of regain standards has been intermittently discussed during the last 35 years; and, as a matter of convenience, standards will undoubtedly be agreed upon in the future.

The value of conditioning is well illustrated by the report of the Bradford Conditioning House, Bradford, England, wherein it is stated that 58,749,870 pounds of tops and 3,498,097 pounds of worsted yarns passed through for testing purposes during 1924.

YARN NUMBERING AND YARDAGE TO THE POUND

TABLE 44.—*Comparative lengths per pound of worsted, woolen, and cotton counts*

Yards per pound	Worsted yarn	Woolen yarn	Woolen yarn	Cotton yarn
	Number	*Run*	*Cut*	*Number*
300			1	
400		¼		
420				½
560	1			
600			2	
800		½		
840				1
900			3	
1,120	2			
1,200		¾	4	
1,500			5	
1,600		1		
1,680	3			2
1,800			6	
2,000		1¼		
2,100			7	
2,240	4			
2,400		1½	8	
2,520				3
2,700			9	
2,800	5	1¾		
3,000			10	
3,200		2		
3,300			11	
3,360	6			4
3,600		2¼	12	
3,900			13	
3,920	7			
4,000		2½		
4,200			14	5
4,400		2¾		
4,480	8			
4,500			15	
4,800		3	16	
4,940	9			
5,040				6
5,100			17	
5,200		3¼		
5,400			18	
5,600	10	3½		
5,700			19	
5,880				7
6,000		3¾	20	
6,160	11			
6,300			21	
6,400		4		
6,600			22	
6,720	12			8
6,800		4¼		
6,900			23	
7,200		4½	24	
7,280	13			
7,500			25	
7,560				9
7,600		4¾		
7,800			26	
7,840	14			
8,000		5		
8,100			27	
8,400	15	5¼	28	10
8,700			29	
8,800		5½		
8,960	16			
9,000			30	
9,200		5¾		
9,240				11
9,300			31	
9,520	17			
9,600		6	32	
9,900			33	
10,000		6¼		
10,080	18			12
10,200			34	
10,400		6½		
10,500			35	
10,640	19			

Yards per pound	Worsted yarn	Woolen yarn	Woolen yarn	Cotton yarn
	Number	*Run*	*Cut*	*Number*
10,800		6¾	36	
10,920				13
11,100			37	
11,200	20	7		
11,400			38	
11,600		7¼		
11,700			39	
11,760	21			14
12,000		7½	40	
12,300			41	
12,320	22			
12,400		7¾		
12,600			42	15
12,800		8		
12,880	23			
12,900			43	
13,200		8¼	44	
13,440	24			16
13,500			45	
13,600		8½		
13,800			46	
14,000	25	8¾		
14,100			47	
14,280				17
14,400		9	48	
14,560	26			
14,700			49	
14,800		9¼		
15,000			50	
15,280		9½		
15,120	27			18
15,300			51	
15,600		9¾	52	
15,680	28			
15,900			53	
15,960				19
16,000		10		
16,200			54	
16,240	29			
16,400		10¼		
16,500			55	
16,800	30	10½	56	20
17,100			57	
17,200		10¾		
17,360	31			
17,400			58	
17,600		11		
17,640				21
17,700			59	
17,920	32			
18,000		11¼	60	
18,300			61	
18,400		11½		
18,480	33			22
18,600			62	
18,800		11¾		
18,900			63	
19,040	34			
19,200		12	64	
19,320				23
19,600	35			
20,100	36			24
20,720	37			
21,000				25
21,280	38			
21,840	39			26
22,400	40			
22,680				27
22,960	41			
23,520	42			28
24,080	43			
24,360				29
24,640	44			
25,200	45			30
25,760	46			
26,040				31

TABLE 44.—*Comparative lengths per pound of worsted, woolen, and cotton counts*—Continued

Yards per pound	Worsted yarn	Woolen yarn	Woolen yarn	Cotton yarn	Yards per pound	Worsted yarn	Woolen yarn	Woolen yarn	Cotton yarn
	Number	*Run*	*Cut*	*Number*		*Number*	*Run*	*Cut*	*Number*
26,320	47				35,840	64			
26,880	48			32	36,120				43
27,340	49				36,400	65			
27,720				33	36,960	66			44
28,000	50				37,520	67			
28,560	51			34	37,800				45
29,120	52				38,080	68			
29,400				35	38,640	69			46
29,680	53				39,200	70			
30,240	54			36	39,480				47
30,800	55				39,760	71			
31,080				37	40,320	72			48
31,360	56				40,880	73			
31,920	57			38	41,160				49
32,480	58				41,440	74			
32,760				39	42,000	75			50
33,040	59				44,800	80			
33,360				40	46,200				55
33,600	60				47,600	85			
34,160	61				50,400	90			60
34,440				41	53,200	95			
34,720	62				56,000	100			
35,280	63			42					

UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPH 281 OF THE TARIFF ACT OF 1913

WITH RELATED ARTICLES IN OTHER PARAGRAPHS

BAGS OF JUTE AND COTTON

Paragraph 281:

Bags or sacks made from plain-woven fabrics, of single jute yarns, not processed.

Paragraph 284:

Basket paragraph, which includes jute bags or sacks made from: (1) plain woven fabrics, of single jute yarns, processed; (2) fabrics other than plain woven, or of other than single jute yarns, whether processed or not; (3) bags or sacks made from vegetable fibre other than jute or cotton.

Paragraph 266:

Basket paragraph which includes bags of cotton.

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Office: Eighth and E Streets NW., Washington, D. C.

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this, industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act, reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article was provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and index" the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of John J. Cameron of the textile division of the commission's staff, and of others.

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BAGS OF JUTE AND COTTON.

TARIFF ACT OF OCTOBER 3, 1913.

[Text of Schedules I and J, relating to bags of jute and cotton.]

PAR. 281. Bags or sacks made from plain woven fabrics, of single jute yarns, not dyed, colored, stained, painted, printed, or bleached, 10 per centum ad valorem.

PAR. 284. All woven articles, finished or unfinished, and all manufactures of flax, hemp, ramie, or other vegetable fiber, or of which these substances, or any of them, is the component material of chief value, not specially provided for in this section, 35 per centum ad valorem.

PAR. 266. All articles made from cotton cloth, whether finished or unfinished, and all manufactures of cotton or of which cotton is the component material of chief value, not specially provided for in this section, 30 per centum ad valorem.

SUMMARY.

The American production of and trade in jute and cotton bags may be considered in the following order: (1) New jute bags, (2) new cotton bags, (3) secondhand bags of jute or cotton.

1. NEW JUTE BAGS.

Imports of jute bags, under the classification of the tariff act of 1913, fell into two classes: (1) Bags or sacks, new or secondhand, made from burlap—a plain woven cloth of single jute yarn—which were not printed or otherwise processed; (2) all other jute bags, whether new or old, such as those made from burlap that has been processed, or those manufactured from a cloth not plain woven—for example, that woven with a twill.

Burlap bags are used for shipping those commodities which require a cloth of stronger texture than can be produced from cotton except at a price much higher than that commonly asked for burlap. A great variety of sizes and types of burlap bags, printed with brands or trade-marks, are manufactured in this country for sacking grain, bran, feed, fertilizer, flour, sugar, vegetables, and other bulky commodities.

New bags made from jute cloth other than plain woven are not manufactured in this country and are not used in the United States, except in the island of Porto Rico. The bulk of such bags enters this country as containers for imported products.

According to a special census taken by the Tariff Commission, the number of new burlap bags produced by American bag factories was 388,526,154 in the calendar year 1914 and 457,306,416 in the calendar year 1919.

The domestic production of jute bags other than burlap is negligible, because domestic manufacturers hold that, with no differential

between the duty on the twilled cloth used in the manufacture of such bags and on the completed bag, it is not profitable to make such bags in competition with India.

With the exception of the grain bags, commonly known as centals, which are imported from India, foreign competition in new burlap bags is negligible. The importation and consumption of centals are confined to our western coast.

According to statistics of the Indian Government, exports from India to our western ports [1] of "gunny bags," including bags made from burlap and from sacking, remained practically the same in the years 1908–1916. Their number averaged yearly between 32,000,000 and 33,000,000.

Since 1916 India's exports of burlap bags to our Pacific ports have been:

	Number.
1917	17,559,200
1918	38,037,400
1919	34,595,000
1920	33,018,000
1921	59,080,400

During the 12 months ended March 31, 1921, India shipped to the eastern and western ports of the United States a total of 64,300,400 bags of burlap. In addition she exported annually to the Pacific coast an average of 2,064,490 bags made of sacking during the period 1917–1921. These were probably for transshipment.

The domestic production of centals averages about 15,000,000, or about one-third of the domestic consumption.

Normally exports of burlap bags from the United States are negligible, but in 1919, owing to conditions growing out of the war, they amounted to nearly 3,000,000 new bags and 4,000,000 secondhand bags.

The American producer of new burlap bags has, with the exception of the trade in centals, entire control of his home market. Imports of centals are equal to between 8 and 11 per cent of the total production of burlap bags.

In the manufacture of jute products India possesses two marked advantages—a local supply of raw material, jute, and a plentiful supply of cheap labor. These advantages enable the Indian manufacturer to land centals on the Pacific coast, notwithstanding the 10 per cent duty, at a lower price than they can be made locally.

India's competition is limited to centals, because these bags are unprinted, standardized, and used in large quantities. India's lack of printing facilities and the 1913 tariff of 35 per cent on printed bags, or bags manufactured from a cloth not plain woven, have rendered it unprofitable for India to compete in supplying a number of different sizes of burlap bags or to introduce bags made of sacking into American markets.

2. New Cotton Bags.

Cotton seamed bags are used for putting up (1) those products which are pulverized or fine, and so require a cloth of close-woven mesh; (2) those products which are commonly retailed in small

[1] Hawaii not included.

quantities in cloth bags; (3) those commodities which demand a bag with a lint that will not affect the contents of the bag.

The leading products shipped in ordinary cotton bags are flour, sugar, cement, meal, feed, and salt.

Seamless bags are used for sacking seeds, peas, beans, and similar produce.

Cotton seamed bags are sewn by machines and are the product of companies that specialize in the manufacture of bags, whereas cotton seamless bags are usually woven by mills which produce them as a subsidiary part of their business. The number of each type produced in continental United States in 1914 and 1919 were:

	1914	1919
Cotton seamed	536,347,285	501,767,657
Cotton seamless	6,964,317	4,683,914

The decline in the production of cotton seamed bags in 1919 may be attributed to the lack of labor. The lower price of the burlap bag, which led to a partial substitution of such bags in cases where burlap and cotton bags are interchangeable was a second factor in their decline.

Imports of cotton bags occur at rare intervals and only in negligible quantities. The largest shipment in recent years was in 1917, when according to Japanese statistics, this country received from Japan 23,600 flour bags, valued at $727.68.

The American manufacturer of cotton bags is free from foreign competition in his home markets. This is likely to continue while the United States holds its present rank as a grower of cotton and as an exporter of cotton cloth.

3. Secondhand Bags of Jute and Cotton.

Except in times of shortage, the bulk of secondhand burlap bags is used to sack vegetables, produce, and feed. As there is objection to the use of secondhand bags as containers for foodstuffs, the number of secondhand cotton bags sold is decidedly less than that of secondhand burlap bags. When not used as containers, secondhand jute bags are cut up either to make smaller or converted bags for holding fittings and machine parts, or to serve as a covering, particularly for the cotton crop.

An estimate made by an association of prominent dealers sets the number of secondhand burlap bags of domestic origin used yearly at about 500,000,000. To this must be added the jute bags sent to this country as containers for products exported to the United States. In contrast, the number of cotton bags used a second time is equal to only 2 or 3 per cent of the annual production of such bags.

Owing to the high price of new bags, the trade in secondhand bags assumed greater importance after 1914. For instance, the secondhand burlap bags sold by 24 prominent dealers in 1914 numbered 34,219,960 and in 1919, 66,714,664. The secondhand cotton bags sold in 1914 by 11 of the above companies numbered 1,887,184; and by 15 in the year 1919, 3,225,459.

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Imports of secondhand bags come from the United Kingdom. The largest number exported from this source to the United States was in 1909, when they totaled 6,243,612 bags.

That imports of secondhand jute bags have been so small was due to the 1913 tariff, under which secondhand bags other than plain woven and unprinted were dutiable at 35 per cent.

GENERAL INFORMATION.

Description and Uses.

JUTE BAGS.

Imports of jute bags, under the 1913 tariff act, fell into two classes:

1. Burlap bags which have not been dyed, painted, printed, or bleached, dutiable at 10 per cent under paragraph 281.

2. All other bags of jute which have been processed, e. g. printed, or dyed, or which have been manufactured from a cloth that is not plain woven, such as sacking, dutiable at 35 per cent under paragraph 284. This is a general paragraph relating to all woven articles manufactured from vegetable fibers other than cotton.

The term "burlap," known in foreign markets as "hessian," refers to a plain woven cloth of single yarns produced from long jute; and the word "sacking" to a twilled cloth made from the heavier and coarser grades of jute fiber.

Gunny bags are bags made from sacking. The word "gunny," however, in its broader and popular sense has come to be applied to all cloths and bags made from jute. For instance, statistics of the Indian Government now divide exports of jute cloth and bags into "sacking gunny cloth," "hessian gunny cloth," "sacking gunny bags," and "hessian gunny bags."

Jute bags are the most widely used means of sacking commodities. In the United States the output of jute bags is limited wholly to burlap. Practically all the burlap bags consumed in this country consist of seamed bags. The number of seamless burlap bags woven on looms is less than one-fourth of 1 per cent of the domestic production of seamed burlap bags.

Jute bags are used in this country for the shipment of a great variety of products—for example, grains, fertilizers, sugar, flour, feed, produce, vegetables, binder twine, and nursery stock. According to their uses, they vary in size, weight, and grade of cloth.

The chief uses are for shipping grain, bran, and feed. The number employed in putting up fertilizer probably constitute the next leading use. Fertilizer is shipped in 100 and 200 pound bags. For putting up flour and sugar, as well as salt, both cotton and burlap bags are used. Millions of burlap bags are used annually for exporting flour, which is sacked in quantities of 140 pounds. Other important uses are for shipping produce, feed, and vegetables.

Leading types of imported bags.—Bags produced here are printed with various brands as ordered, whereas imported bags are unprinted. The tariff act of 1913 levied an additional duty of 25 per cent ad valorem on printed bags.

Imported jute bags are confined to (1) grain bags used for sacking 100 pounds of wheat, commonly known as centals, which are imported from Calcutta to the Pacific coast; and to (2) sugar bags for

shipping raw sugar from Cuba, Porto Rico, and Hawaii to refineries in the United States. Centals are used in the shipment of wheat. They measure, with hemmed top, 22 inches in width and 36 inches in length and weigh 12 ounces. Imported centals are manufactured from 10-ounce burlap, 36 inches in width, cut 46 inches, or of a width ranging from 40 to 45 inches, cut about 39 inches long, the cloth counting 11 porter and 12 shot,[1] whereas the domestic bag is made chiefly of 37-inch 10-ounce cloth cut about 46½ or 47 inches long, and when sewed is of the same size and weight as the bag manufactured in Calcutta.

Cuban and Porto Rican sugar bags, which are seldom manufactured in this country, are large and heavy. They are made to hold 320 pounds of sugar. They are not manufactured from burlap, but from twilled jute cloth, and have been subject to a duty of 35 per cent ad valorem. Weight for weight they are cheaper than the lighter domestic burlap bag. The Cuban bag measures 28 inches in width and 48 inches in length and weighs 2½ pounds. It is made with a blue stripe running longitudinally, and is often called the "blue-stripe" bag. The sugar bag used in Porto Rico is 26½ by 44 inches and weighs between 2¼ and 2½ pounds. The sugar bag used in Hawaii is manufactured from a better burlap fabric than ordinary hessian cloth. The Hawaiian bag measures 22 by 36 inches in size, weighs 16 ounces, and has a capacity of 150 pounds.

COTTON BAGS.

The cotton bag is extensively employed to ship commodities which require a close-woven fabric. The chief use is to ship flour. Estimates of the quantity so used vary from 62½ to 90 per cent of domestic consumption. For the distribution of flour in packages up to 98 pounds, cotton bags are considered superior to burlap. For putting up sugar, in quantities under 100 pounds, cotton bags are extensively used. Many are also used in shipping cement.

Peas, beans, seed, and similar commodities are for the most part put up in cotton seamless bags, which are stronger than the ordinary cotton bag. Cotton seamless bags, unlike the cotton bag sewn by machine, can be used many times and are convenient for handling produce carried in semibulk in retail stores. The greater number of the cotton seamless bags produced in this country measure 44 inches in length and 20 inches across, and are known as 2-bushel bags. The standard weight is 16 ounces.

Burlap bags are superior to cotton bags for shipping rough commodities requiring strength. Burlap is cheaper, does not rip when snagged, and does not stain easily. Cotton bags are, on the other hand, superior for finely-ground products. They give off less lint than burlap and they take the imprint of trade-marks more readily. Under normal conditions there is little competition between the two. Only when the price of one is much higher than that of the other is substitution likely to occur.

[1] In Scotland the reed used in weaving is listed according to the number of "porters" or reed sections of 20 splits, 2 ends to a split, in the Scottish ell of 37 inches. An "11-porter 12-shot hessian" has about 13 warp ends and 12 picks per square inch of finished cloth.

[illegible]

[illegible] production was:

	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

[illegible]

[illegible] producing [illegible] bags are found in the [illegible]. Their number in 1914 was [illegible] [illegible] wage earners. In 1919 they numbered [illegible].

PRODUCTION OF BURLAP BAGS.

In recent years there have been a number of factors tending to stimulate the domestic production of burlap bags. The entrance of the United States into the war resulted in a demand for bags for use as entrenchments and led to a marked increase in the use of bags as a substitute for wooden cases to reduce the bulk of shipments overseas. Owing to the relatively higher price of cotton bags in recent years an attempt was made to substitute burlap bags wherever possible. On the Pacific coast bags made of burlap were being extensively used in the summer of 1920 as carriers of cement. On this subject a western manufacturer reports that, when prices are normal, approximately [illegible] per cent of all the cotton bags produced on the Pacific coast are used for sacking cement. At the time of his writing, August, 1920, jute bags, however, were being used for containers for cement because their price was about half that of the cotton bag ordinarily used.

PRODUCTION AND CONSUMPTION OF CENTALS, 1914–1919.

The following table, showing the domestic consumption of centals, indicates the extent to which the United States relies on imports to supply its need of this particular type of bag:

Calendar year.	Total consumption.	Number manufactured in United States.	Number imported.
1914	56,12[illegible],200	11,240,000	44,883,200
1915	[illegible]	14,5[illegible]	31,011,200
1916	3[illegible],79[illegible]	16,15[illegible],000	17,539,200
1917	52,607,400	14,570,000	38,037,400
1918	49,712,000	15,117,000	34,595,000
1919	47,669,000	14,501,000	33,168,000

The totals relating to bags imported include India's shipments of: (1) Gunny bags to our western ports in the fiscal years ended March 31, 1915 and 1916; (2) hessian bags in 1917–1919; and (3) her combined exports of burlap to our eastern and western ports in 1920.

Owing to the extensive use of secondhand bags, the number of burlap bags in use in this country is in excess of the production of new bags. The National Burlap Bag Dealers' Association, which is an association of leading domestic dealers in secondhand bags, estimates that the number of secondhand burlap bags of domestic manufacture used in recent years has been in excess of 500,000,000 annually. That the number of secondhand burlap bags used in the years 1914–1920 was about equal to the production of new burlap bags is substantiated by a census of war commodities made in 1918 by the Department of Commerce. According to that census, the number of bags on hand as of June 1, 1918, reported by 3,473 establishments totaled 127,988,975 new bags and 91,100,607 secondhand bags. Of the new bags about 16,000,000 consisted of Cuban and Porto Rican sugar bags.[1]

The domestic production of cotton seamless bags has been falling off for a number of years. The chief reason for this decline has been the comparatively higher price of the seamless bag.

MATERIALS.

Burlap.—Burlap, or hessian as it is termed abroad, is a plain woven cloth manufactured from single jute yarns. Jute is grown in India, and with the exception of cotton is produced in greater quantities than any other fiber. Practically all the burlap consumed in the United States is imported from India and the United Kingdom.

In 1917 the consumption of 3,473 establishments in the United States was 627,691,204 linear yards. For 1918 their estimated consumption was 642,101,351 yards. In the 12 months ended June 30, 1921, imports into the United States were 474,000,000 pounds, equal to about 789,000,000 square yards. More than 99 per cent comes from British India and the United Kingdom.

Imports since 1904 have been as follows:

Quantitiy and value of imports of burlap, 1905–1921.

Period.	Total.		British India.		United Kingdom.	
	Average yearly quantity.	Average yearly value.	Average yearly quantity.	Average yearly value.	Average yearly quantity.	Average yearly value.
	Pounds.		*Pounds.*		*Pounds.*	
1905–1909 [1]	317,136,742	$21,379,161	257,022,688	$16,514,292	58,672,691	$4,714,228
1910–1914	421,383,181	29,420,977	358,704,219	24,083,977	59,867,928	5,049,257
1915–1919	415,483,840	48,331,193	373,514,527	41,974,961	38,020,795	5,683,446
1920	541,113,614	88,020,057	482,932,925	73,730,640	53,402,830	13,344,105
1921	474,168,221	41,279,072	444,669,569	36,561,420	26,064,594	4,259,821

[1] The quantities of burlap by countries were first given in 1905.

More than 80 per cent of the burlap imported, not bleached, dyed, or colored, is used in the manufacture of bags. Assuming that on the

[1] The results of this census are tabulated on p. 31.

average 1,000 burlap bags weigh 800 pounds,[2] 310,820,923 pounds were consumed in American bag factories in 1914 and 365,845,132 pounds in 1919, which represent 80 and 83 per cent, respectively, of the imports of burlap in those years.

The domestic production of burlap is small. There are two State prisons on the Pacific coast which import raw jute, manufacture burlap, and make bags, and one large concern in the East which makes the burlap used in packing its own product. During the years 1917 and 1918 there was a slight increase in domestic production, which was due to the installation of 285 looms by the Eastern firm mentioned above and to the production of a small part of exceptionally wide burlap by manufacturers of linoleum for their own use. In 1920 no American manufacturer of burlap bags was weaving burlap. India has a monopoly of the raw material, jute, and an abundance of cheap labor; the lack of these advantages is an obstacle to its production in the United States.

Sacking.—Sacking is a heavy, closely woven jute fabric, usually a twilled cloth in which the number of warp threads per square inch exceeds the number of weft threads.

Official statistics of India show that her exports of gunny sacking to the United States amounted to about 5,000,000 yards in,1917, to less than 1,000,000 in 1919, and to 4,564,300 yards in 1921, fiscal years. The bulk of these imports of sacking was probably for transshipment, or for reexport, or for manufacture into bags to be exported with the benefit of drawback. The domestic consumption is small.

Cotton cloth.—The principal cotton cloths used for making bags are osnaburgs, sheetings, and print cloths. These are coarse and medium grade cloths, woven from ordinary upland cotton. Some of the osnaburgs for bag making are made of low-grade cotton, mixed with waste. It is estimated that more than 75 per cent of the cotton cloth thus used is woven by mills that are not engaged in bag making, although several manufacturers of bags weave all or a part of their cotton cloth.

METHODS OF PRODUCTION.

Seamed bags.—Bags other than seamless are made by cutting up the cloth into definite lengths according to the size of the bag required, and then sewing the bottom and the side, or the sides only, on one of the various types of sack-sewing machines. The cloth is cut into the proper lengths either by hand or machine. The lengths are then separately doubled up, and the sides are sewn by special sewing machines and the ends hemmed. The name of the user or a trade-mark and other details are usually printed on the bags in one or more colors.

Seamless bags.—Seamless cotton bags are woven on a cam loom specially built for the purpose. The loom weaves a double or tubular cloth and at the bottom of the bag weaves solid. This makes the bottom and the sides of the bag seamless, and less liable than the ordinary seamed bags to break out either at the sides or at the bottom. Seamless bags are commonly made with either three or four leaf twill.

[2] Hearings before the Committee on Ways and Means, 1913, p. 4048.

All of the principal machinery used for making bags is manufactured in this country. The cutting machinery, sewing machines, printing presses, and baling presses are of domestic make. In the bleaching or other finishing processes, machinery of English make is occasionally to be found.

ORGANIZATION.

There are few domestic companies that specialize in the manufacture of new bags that do not make both burlap and cotton bags.

According to census reports, the industry has shown a steady growth since 1904. The number of establishments has been: 1904, 79; 1909, 109; 1914, 138; 1919, 216.

Secondhand bags.—Trade in secondhand bags is scattered among thousands of dealers. The bags are gathered up by rag and junk men all over the country, and are sorted out by them and sold to dealers operating in both large and small cities.

As showing the great variety of secondhand bags handled by the average firm, one company in New York City which sold 6,284,000, secondhand burlap bags in 1919, listed over 22 different types of bags, which it had handled during the course of the year, in quantities ranging from 2,000,000 for jute flour bags to 32,000 for cement bags.

Seamless bags.—In the years 1914 and 1919, according to the data at hand, there were seven cotton manufacturing companies that wove cotton bags as one of their products. Seamless burlap bags are comparatively rare in the United States. There is only one concern weaving such bags in this country; it manufactures them for the chemical industry.

GEOGRAPHICAL LOCATION.

In 1919 more than one-half of the 216 factories were located in six States, as follows: New York, 56; New Jersey, 14; Pennsylvania, 14; Maryland, 12; Virginia, 13; and Missouri, 10. The value of the product of the factories in these six States was as follows in 1919: Missouri, $38,020,623; New York, $26,821,939; New Jersey, $14,696,734; Pennsylvania, $6,979,582; Virginia, $4,840,831; and Maryland, $3,132,886. The value of the product of 5 factories in Louisiana was $18,310,111; of 6 factories in California, $13,414,851; and of 7 factories in Tennessee, $12,318,292. The greater number of the seamless cotton bags are the product of mills located in New England.

DOMESTIC EXPORTS.

Previous to 1914 the export of bags was relatively unimportant, but the World War resulted in a decided impetus, which extended through the fiscal year 1920, when exports were about 50 per cent greater in value than imports. The value of exports was 80 per cent less in the calendar year 1921 than in the calendar year 1920. Despite this decline, however, it was still about 50 per cent greater than the average during the five fiscal years 1910–1914. In the period 1915–1919 exports averaged $2,485,053. This was more than four times the average value during the previous decade.

The character of exports changed somewhat during the war period. Since 1910 exports have been distributed as follows:

Proportion of total exports of bags of vegetable fiber destined for specified countries, 1910–1921.

Exported to—	Fiscal years.			Calendar years.	
	1910–1914 (average).	1915–1919 (average).	1920	1920	1921
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
United Kingdom	25.7	5.9	0.9	1.3	0.4
Canada	13.6	10.6	10.0	14.5	23.1
Cuba	8.7	18.6	7.9	10.3	10.7
Mexico	7.6	10.5	5.1	8.7	25.7
Dominican Republic	2.7	9.4	2.9	5.0	7.1
Guatemala	.7	3.1	1.1	.5	.7
Argentina	13.8	4.6	51.6	27.2	4.5
Uruguay	.1	2.0	.....	.1	.2
Belgium	1.4	.6	.1	.2	.6
Germany	1.7	.....	.9	1.6	1.7
All other countries	24.0	34.7	19.5	30.6	25.3
Total	100.0	100.0	100.0	100.0	100.0

During the period 1914–1919 there was a marked increase in the number of burlap bags and a decided falling off in the quantity of cotton bags shipped from the United States. Reports from the leading domestic manufacturers of bags, and from 24 firms that make the collecting and selling of secondhand bags either the main or an important part of their business, and from 4 exporting houses, show that their combined export shipments of jute bags in the calendar year 1914 amounted to 500 new and to 1,334,775 secondhand bags; and in 1919, 2,945,300 new and 4,607,811 secondhand bags. The general term "jute" is used rather than "burlap" in connection with exports of bags, because there are no data at hand showing whether any of these bags were manufactured from sacking and exported with the benefit of drawback, or were secondhand bags of like material, originally sent into this country as containers for foreign products. The total for cotton bags in the same years was 642,000 new and no secondhand bags in 1914, and 284,400 new and 22,000 secondhand bags in 1919. These figures do not represent the total quantities of bags exported in these years, as they do not include shipments of new bags made by several manufacturers who considered them negligible and so did not record them.

Previous to 1914 the United Kingdom, Mexico, and Argentina received from one-half to two-thirds of the total value of all bags exported from the United States. Germany and Belgium, after the United Kingdom, were the best markets in Europe. Export trade to Argentina is subject to marked fluctuations. Shipments previous to 1914 consisted, for the most part, of cotton flour bags, a line in which the United States dominated the Argentine market. In Argentina American cotton bags had to compete with those imported from the United Kingdom; practically all of Argentina's imports of cotton bags were supplied by the United Kingdom and the United States. Before the war the United Kingdom found its best market for burlap bags in Argentina.

After 1915, Canada, Cuba, and Mexico became the principal markets for American bags of vegetable fiber; during the 5-year period 1915–1919 (fiscal years) they took 40 per cent of all bags exported, while in 1920 and 1921 (calendar years) they took 34 per cent and 59 per cent, respectively. The bulk of shipments to Cuba consists of second-hand Cuban sugar bags which are reexported after having been used as containers for raw sugar sent to this country.

The American exporter may find increased difficulty in marketing burlap bags in South America, because of the increased competition from the United Kingdom and India, and possibly because of the fact that South American countries may follow the example of Brazil, which has encouraged the importation of raw jute by the establishment of a prohibitive tariff on jute cloth and jute bags, and has consequently become practically self-sufficient in the matter of burlap containers for her principal products. The latest reports are that the Brazilian Government is considering the promotion of jute growing in Bahia and Sao Paulo, where the climate is said to be similar to that of India.

There is every likelihood that cotton bags, upon a decline in high prices, will again form the bulk of bag exports from this country. In spite of the tariff on jute bags by a number of South American countries (in a number of cases prohibitive), in the main the quantity of cotton bags is not affected to any extent by customs duties.

DRAWBACKS.

The American manufacturers of burlap bags have taken advantage of the drawback law which provides for a refund of 99 per cent of the duty on all imported burlap when manufactured into bags and exported.

The following table shows the extent to which the trade is affected by the drawback:

Fiber bags exported with benefit of drawback, 1903–1921.

Fiscal years.	Number.	Pounds of burlap contained therein.	Value of burlap.	Drawback paid on bags.
1903	[1] 31,876,121			$461,444.64
1904	28,678,271			399,233.01
1905	20,579,996			277,269.02
1906	20,445,902			281,482.11
1907	24,775,358			352,470.99
1908	27,087,986			459,891.69
1909	24,670,734			395,210.15
1910	16,133,357			249,275.65
1911	17,529,710	[2] 16,785,413	[2] $889,509.11	234,403.76
1912	20,070,241	19,334,971	1,041,709.71	271,312.07
1913	12,247,893	18,917,719	1,234,323.13	302,404.00
1914	17,024,857	15,476,528	1,310,216.13	297,367.03
1915	4,253,238	3,585,474	309,273.00	82,664.03
1916	655,044	275,499	21,917.00	20,649.70
1917	425,194	59,808	4,875.00	17,218.13
1918	729,609	348,374	29,999.00	17,366.23
1919	89,813	36,794	2,918.00	3,606.41
1920	81,199	54,853	4,238.00	2,367.49
1921 [3]	103,822			7,452.71

[1] Number of bags exported with benefit of drawback not recorded before 1903.
[2] The quantity and value of burlap contained in bags so exported are not available before 1911, nor since 1920.
[3] Calendar year.

In addition to the export of bags of domestic manufacture there has been some reexport of bags of foreign origin, and this trade has made a substantial increase since 1914.

FOREIGN PRODUCTION.

INDIA.

India is by far the largest manufacturer of jute products in the world. The causes contributing to this are a monopoly of the raw material and an abundance of cheap labor.

India is also the world's leading exporter of jute goods. Her exports represent about 60 per cent of her production. This production constitutes about 52½ per cent of the world's output of jute goods. The total value of manufactured jute shipped abroad in 1918 amounted to $170,823,883, constituting in that year 22 per cent of her combined exports of all commodities as against 9 per cent for the five-year period preceding the war. Her consumption of raw jute, in bales of 400 pounds each, advanced from 460,000 in 1874, or from less than one-fifth of all the raw jute grown, to approximately 5,000,000 in 1914, or to about one-half of the world's production. In the same time the consumption at Dundee, the chief manufacturing jute center after Calcutta, increased from 1,200,000 bales to 1,295,000 bales, declining from approximately two-fifths of the world's crop to one-eighth; while the Continent of Europe increased its consumption from 300,000 bales in 1874 to 2,610,000 bales in 1914, or from less than one-eighth of the world's production to more than one-fourth.

The Indian jute mills are usually of an up-to-date type. Many are driven by electricity generated from coal. Since the war the jute industry in India has become more and more independent of Great Britain in the matter of machinery.

In point of quantity India's average yearly exports of jute bags during the years 1907–1914 were equal to about 80 per cent of the American production. During the same period she shipped 15.25 per cent of her total exports of gunny bags to Australia, 13.71 per cent to the United States, 10.22 per cent to Chile, and 3.78 per cent to Egypt.

Exports during the first year of the war were about 397,000,000 bags. In the year 1915–16, largely because of the tremendous demand of the United Kingdom for burlap bags for military purposes, shipments of bags were over 794,000,000. This increase was maintained during the following two years. With the cessation of war Indian exports fell to the level established in the years preceding 1914. For the fiscal year ended March 31, 1919, foreign shipments totaled 583,095,999 bags. For 1920 they showed a further decline to 342,729,000. In 1921 shipments amounted to 533,908,109 bags.

Normally the bulk of India's exports consists of bags made from sacking.

The United States is India's best customer for burlap cloth and burlap bags. Exports of burlap cloth to the United States amount to about two-thirds of all the burlap cloth shipped yearly. In contrast, shipments to the United States of burlap bags amounted in 1920 to 33,168,000, or 38 per cent of all the hessian bags exported in that year; and to 64,300,400 or 47 per cent in 1921. Australia and the United Kingdom were the next best markets.

DUNDEE.

The city of Dundee, which, up to 1855, was the only center for jute goods produced by machinery, is to-day second to Calcutta as a manufacturer of jute products. Dundee really represents the jute industry of the United Kingdom, for the output of the few jute mills at Aberdeen and other points forms but an insignificant part of the total. It is estimated that Dundee exports 40 per cent of her output of jute goods, which is equivalent to about one-eighth of the world's production. The Dundee mills do not compare in size with those in India. As they are older they are usually inferior in construction and are not equipped with up-to-date machinery.

In point of number of looms and operatives, the jute industry of Dundee has remained practically stationary for the last 30 years. In December, 1919, Dundee was employing about 35,000 operatives, as against an average of 264,373 workers in India for the fiscal year 1920. Owing to the greater efficiency of the Dundee operatives these totals do not indicate the relative productivity of the two countries. Largely because of the rise of the Calcutta jute industry, Dundee has made very little progress since 1881 in the production of jute goods of the coarser varieties.

During the years 1900–1916 the United Kingdom's export trade in bags increased between 9,600,000 and 10,800,000 every five years. For the five years 1905–1909 the average yearly quantity was 39,637,128 bags, valued at $3,731,885, which represents an increase of 35.63 per cent in quantity and 44.16 per cent in value over the shipments for the preceding five years. The years 1910–1914 recorded a further expansion to an average yearly quantity of 50,619,396 bags, valued at $5,096,535. The first two years of the World War, with exports of 50,899,000 and 51,376,000 bags, respectively, showed a further advance in the number of bags exported. For the year 1917, however, the number declined to 37,670,000, and for 1918 it fell to the low figure of 10,731,000. This decline in exports was largely due to the effects of the war. During the year 1918 exports from Dundee, consisting mainly of flax and jute products, were completely under Government control and were generally curtailed, so far as the civilian trade was concerned.

Following the close of the war the United Kingdom's exports of bags have been as follows: 47,204,000 in 1919 and 37,378,092 in 1920.

In contrast to India, Dundee's foreign markets for bags are limited to those where she is favored by freight rates and where the demand is for small quantities of a bag of special type.

The United States, exclusive of Porto Rico, was the third best market of the United Kingdom during the years 1900–1914.

Average yearly exports of bags from the United Kingdom to the United States, by 5-year periods, 1900–1920.

Period.	Average yearly quantity.	Average yearly value.	Per cent of total quantity.	Per cent of total value.	Average price, in cents, per bag.
1900–1904	1,846,176	$114,683	6.92	4.43	6.29
1905–1909	2,956,932	117,034	7.46	3.14	3.96
1910–1914	3,547,704	151,100	7.01	2.96	4.26
1915–1919	676,680	75,012	1.71	.99	11.08
1920	163,152	77,893	.40	.60	47.74

Dundee has found it more and more difficult to compete in the cheaper grades of jute products, such as cloths and bags, manufactured in India and, to a lesser degree, on the Continent. Consequently, there has been a decided tendency in late years for Dundee to specialize in the higher grades of jute products, such as floor cloths, backings for lineoleums, and fine yarn. Thus the force of India's competition is being felt less and less in Dundee. Another factor tending to lessen competition is that the Calcutta mills are largely managed by Scotchmen and controlled by Scottish interests.

OTHER FOREIGN COUNTRIES.

As bags are easily made, there is a tendency for all countries to become independent of foreign sources for their requirements. The European markets for jute bags were formerly supplied almost entirely by Dundee. Within the last 40 years, however, such markets, through the erection of tariff walls, have been closed more and more to the foreign merchant. Thus, while the industry as a whole in the United Kingdom has made but little if any progress since 1880, the jute industries of Germany, Austria, France, Belgium, Brazil, and other countries have been making considerable headway.

The development of Japan's export trade during the war brought about an increase in her consumption and exportation of jute and cotton bags. Her exports of gunny bags were 864,000 in 1917; 4,066,000 in 1918; 10,967,000 in 1919; and 4,402,000 in 1920. Of the gunny bags exported, slightly more than 10 per cent in 1918, and less than 1 per cent in 1919 and 1920 were destined for the United States. Her exports of cotton bags were 11,151,000 in 1917; 13,754,000 in 1918; 8,044,000 in 1919; and 7,452,000 in 1920. Over 90 per cent in each year were exported to China. During the fiscal year 1917 the United States imported 1,052,332 pounds of burlap bags from Japan, while in the calendar year 1920 imports were 329,948 pounds.

Brazil has made such progress in the manufacture of jute products that she has become independent of foreign sources for the great number of bags necessary to move her crops. This is partly due to the high duty that Brazil levies on bags—so high that even the British, who are able to compete with other textiles of domestic manufacture, do not find it profitable to ship bags to Brazil.

The chief use of bags in Argentina is for sacking grain. It is estimated that over 100,000,000 are used annually for this purpose. Although the greater number of the bags consumed in Argentina are of domestic make, imports of jute and cotton bags are large and form a considerable percentage of the bags exported from the United Kingdom and the United States. In the first six months of 1919 there were imported into Argentina 36,800 metric tons of sacking for use in the manufacture of bags.

IMPORTS.

According to the reports of the Government of India, shipments of gunny bags from that country to Pacific ports of the United States (not including Hawaii) amounted to 44,883,200 for the fiscal year ended

March 31, 1915, and to 39,364,500 for the fiscal year 1919. Beginning with 1917, India has divided her shipments into "sacking bags" and "hessian gunny bags." Under the first of these headings the United States is credited with having received in 1919, through her Pacific ports, a total of 3,534,500 made from sacking material and under the second 34,595,000 made of burlap. India's shipments of bags to continental United States during the fiscal year ended March 31, 1920, totaled 33,168,000 hessian bags and 9,866,091 sacking bags, while in 1921 they totaled 64,300,400 hessian bags and 7,511,300 sacking bags.

In addition to secondhand bags of domestic origin millions of bags are sent to this country as containers of foreign products. The leading types of foreign bags are those containing sugar from Cuba and the Philippines, coffee from Brazil, linseed and corn from Argentina, cocoa beans from South America and the West Indies, copper ores from Chile, nitrates from Peru, argols and talcum powder from both Italy and France, and garnets from Spain. All these bags are of jute and for the most part of Calcutta manufacture.

BURLAP BAGS.

During the fiscal years 1900–1909 the British Empire supplied 98.71 per cent of the value of all jute bags brought into this country. During the four fiscal years 1911–1914 the percentage was even greater, but it fell off slightly after the war began. For the fiscal years 1915–1919 imports from the British Empire constituted 97.90 per cent of the quantity and 97.86 per cent of the value of the total imports. In the fiscal year 1920 the percentages were 94.81 of quantity and 95 of value, while in the calendar year 1921 they were 99 per cent of both quantity and value. Imports from the British Empire are mainly supplied by India.

Imports of burlap bags for consumption, which includes those consumed in Hawaii and Porto Rico, ranged during the fiscal years 1900–1914 between a minimum of 30,037,085 pounds in 1904 and a maximum of 62,875,362 pounds in 1914. The increase was most pronounced during the period 1905–1909, when the yearly average was 48,885,154 pounds. In 1910–1914 the yearly average showed a further rise to 52,138,628 pounds.

The first two years of the World War had no marked influence on imports of burlap bags, but during the fiscal years 1916–17 and 1917–18 imports declined to 35,055,490 pounds, and to 31,511,242 pounds, respectively. For the fiscal years 1918–19 and 1919–20 imported bags totaled 39,385,045 and 38,799,806 pounds, respectively, while for 1921 they rose to 70,632,965 pounds.

The decrease in quantities during the years 1915–1919, however, was not accompanied by a corresponding decline in value. The quantities used during the years 1915–1919 were 18.80 per cent less than in the preceding five years, whereas the average yearly value of such bags for the years 1915–1919 was $4,133,517, an increase of 21.96 per cent. In 1920 there was a further decrease in quantity accompanied by an increase in value, whereas in 1921 there was an increase over 1920 of 82.04 per cent in quantity, while the increase in value was 42.85 per cent.

Burlap bags—Imports for consumption, 1900–1922.

Year ended June 30—	Quantity.	Value.	Increase (+) or decrease (−) over preceding period in—	
			Quantity.	Value.
	Pounds.		*Per cent.*	*Per cent.*
1900–1904.....average..	41,403,143	$1,967,273	.....	.....
1905–1909.....do....	48,885,154	2,976,744	+18.07	+51.32
1910–1914.....do....	52,138,628	3,389,298	+6.66	+13.86
1915–1919.....do....	42,334,046	4,133,517	−18.80	+21.96
1920.....	38,799,806	5,096,435	−8.35	+23.25
1921.....	70,632,965	7,278,194	+82.04	+42.85
1922.....	56,606,844	3,709,316	−19.86	−49.03

The United States receives the bulk of her imports of jute bags from India. The value of those shipped from the United Kingdom formed a decreasing percentage of the total value of such imports from 1907 to 1919, when it may be said that they had disappeared. In 1920 and 1921 such imports from the United Kingdom amounted to 586,862 pounds and 5,300,610 pounds, respectively, in quantity, and $98,736 and $204,950, respectively, in value. The pre-war figures were considerably above those for 1921, however.

Secondhand bags.—Such bags as come to this country from the United Kingdom are for the most part secondhand or of special types.

Previous to the war, when shipping space could be easily obtained, the bulk of imports of secondhand bags consisted of those commonly known as Liverpool la Platas, so called because they were shipped to this country from Liverpool and were made up to a very large extent of bags which had been used when new as containers for products exported from Argentina. Since the war, bags originally filled with corn shipped from Argentina to the British Isles, and California centals, have constituted the larger part of imports of secondhand bags.

New bags.—India controls the import trade of the United States in new bags. She ships bags to both Pacific and Atlantic coasts with this distinction: That bags for Pacific ports consist of burlap bags for wheat, whereas those consigned to Atlantic ports are sacking bags that have Porto Rico, Cuba, and the West Indies as their final destination, where they serve as containers for raw sugar. Imports of jute bags through Pacific ports constitute between three-fifths and four-fifths of the value and quantity of all jute bags shipped into the United States. According to official reports of India, during the years 1908–1916 the number of bags received yearly on the western coast averaged between 32,000,000 and 33,000,000.

Since 1917 India has divided her exports of bags into two classes: "hessian gunny" and "sacking gunny."

Number of hessian gunny bags and sacking gunny bags shipped from India to the United States, 1917–1921.

Year ended March 31.	Hessian gunny bags.			Sacking gunny bags.		
	Pacific ports.	Atlantic ports.	Total.	Pacific ports.	Atlantic ports.	Total.
1917	17,559,200	4,991,200	22,550,400	1,276,200	8,749,100	10,025,300
1918	38,037,400	58,800	38,096,200	3,082,400	4,607,200	7,089,600
1919	34,595,000	1,735,000	36,330,000	3,534,500	6,583,200	10,117,700
1920	33,018,000	150,000	33,168,000	1,073,750	8,792,341	9,866,091
1921	59,080,400	5,220,000	64,300,400	1,355,600	6,155,700	7,511,300

COTTON BAGS.

Cotton bags are seldom imported; those of foreign origin come only in neglible quantities.

Costs of Production.

The cost of converting burlap or cotton cloth into bags forms a small part of the total cost of the bags. In recent years the prices of burlap and of cotton cloth have been far above normal and subject to sudden fluctuations.

Estimates given by representative companies regarding the ratio which the cost of manufacturing of bags in June–July, 1920, bears to the total costs of such bags, varied for cotton bags between 6 and 10 per cent and for burlap bags between 8.5 and 13 per cent.

The processes of making burlap and cotton bags are practically the same, and for the same size of bag would call for the same expenditure of labor. The higher percentage of manufacturing costs in the summer of 1920 for the burlap bag was due, first, to the greater cost of the cotton cloth, and, secondly, to the relatively lower selling price of the burlap bag.

Costs of manufacturing bags have advanced in recent years. In 1913 the president of one of the largest concerns, which has factories in different parts of the country, testified that in the previous year his company had produced 89,835,000 plain woven, unprinted burlap bags at a cost of $5.49 per thousand.[4] A firm located in the Middle West, which turned out a total of 28,000,000 bags in 1919, stated that the costs of manufacturing burlap bags per thousand in July, 1920, ranged from $10 to $20 and for cotton from $12 to $20.

In describing the increase in costs of production in recent years the president of a concern located in Pennsylvania wrote in June, 1920

> In the old days, before the war, we used to add $7.50 per thousand to the cost of the goods to cover all making costs and profit, but this figure was not nearly sufficient to let one out whole, and before the war we are rather of the opinion that this had about doubled. During the war, on account of the greatly increased wages, etc., it got up to $30 and is now down to about $25 or may be a little less. Different manufacturers, of course, figure in entirely different ways, depending largely upon whether they are busy or not, but we think you will find the above figures are not very far wrong.

[4] Hearings before Committee on Ways and Means, 1913, p. 3494.

In September, 1920, estimates furnished by representative firms specializing in the sale of secondhand bags concerning the percentage that the costs of repairing bags bears to their selling price ranged between 25 and 30 per cent. Of two other concerns, whose estimates differed from the majority of the trade, one stated that the cost of making the average secondhand bag serviceable was about 5 per cent of its selling price. This concern handles about 20,000,000 bags yearly, a substantial part of which consists of imported bags. The second firm set the cost at from 10 to 50 per cent of the selling price. An average of the costs submitted was 2.6 cents per bag. For heavy sugar bags, however, the cost was about 5 cents.

The cost of repairing secondhand bags has also increased in recent years. One of the largest handlers of secondhand bags, whose factory is located in New York, stated that its wage rates doubled between 1917 and 1920, and that in July, 1920, it was paying its factory employees for ordinary labor a minimum wage of $30 per week of 55 hours. Likewise, a firm which has its factory in a Southwestern State reported that many of the girls making new bags and patching up secondhand bags were averaging in October, 1920, between $4 and $5 per day in wages.

PRICES.

NEW BURLAP BAGS, 1914–1920.

As indicative of the trend of selling prices of burlap bags in the years 1914–1920, the selling prices of 100-pound feed bags, 140-pound flour bags, and the burlap bags containing 40 by 48 inches of 7½ or 8 ounce burlap may serve as examples. The prices of 100-pound and 140-pound bags were furnished by two companies, the first of which is located in Ohio and the second in Minnesota; the prices of the 40 by 48 were furnished by three concerns, with headquarters in California, Tennessee, and Wisconsin.

Prices of new burlap bags, 1914–1920.

Year.	Average 140-pound burlap bag.	Average 40 by 48 inch burlap bag.	Average 100-pound burlap bag.
	Per thousand.	*Per thousand.*	*Per thousand.*
1914	$89.92	$71.10	$75.95
1915	110.79	73.55	94.43
1916	133.10	99.35	110.16
1917	174.56	134.39	147.04
1918	328.87	256.38	273.97
1919	227.90	167.03	180.30
1920	224.78	157.63	169.40

CALIFORNIA CENTALS, 1915–1920.

California centals made to compete with bags imported from Calcutta showed about the same ratio of increase in price during the years 1915–1918 as other bags of domestic manufacture. According to the figures furnished by a domestic manufacturer, they increased in price from $56.25 per 1,000 bags on January 1, 1915, to $265 on July 1, 1918. Centals decreased to $130 on January 1 and July 1 of 1919. Unlike other bags of domestic manufacture, however,

the prices of centals did not show a further decline in 1920. As compared with an average price of $133.75 for 1919, the prices listed on the 1st of January and of July, 1920, averaged $172.50.

Commenting upon the prices of centals for 1920, the manufacturer furnishing such data writes:

* * * We might state on the 1st of June this year (1920) the price of grain bags was 23 cents, and on the 1st of August the bags could be purchased at 15 cents. Such a difference in the busy season is, of course, quite unusual, and this condition is brought about largely by speculation. The price of 23 cents on June 1 was too high and the price of 15 cents on August 1, 1920, was far below the cost of importation.

In terms of other domestic bags of the same capacity, and manufactured for about the same purpose, centals are ordinarily from 15 to 25 per cent lower in price.

SECONDHAND BURLAP BAGS, 1914–1919.

The prices of secondhand burlap bags increased steadily during the years 1915–1918 and then declined in 1919. The average price of 100-pound feed bags and of 100-pound granulated-sugar bags and of 140-pound flour export bags will serve as an example.

Prices of secondhand burlap bags, 1914–1919.

Year.	Average 100-pound feed bag.	Granulated-sugar bag.	Average 140-pound burlap bag.
	Per thousand.	*Per thousand.*	*Per thousand.*
1914	$56.00	$46.66	$74.00
1915	52.00	35.00	63.75
1916	66.11	41.50	92.50
1917	95.44	56.00	116.79
1918	166.89	109.00	231.25
1919	120.00	77.50	144.73

Secondhand burlap bags usually sell about 30 per cent less than new bags of the same type.

NEW COTTON BAGS, 1914–1920.

A survey of the selling prices of new cotton bags during the years 1914–1920 shows that the percentages of increase or decrease in the selling prices of different types of cotton bags were practically the same.

Prices of new cotton bags, 1914–1920.

Year.	Average one-fourth barrel.	Average one-half barrel.	Average 40 by 48 inches.
	Per thousand.	*Per thousand.*	*Per thousand.*
1914	$49.74	$75.95	$84.75
1915	42.19	63.34	64.40
1916	51.93	79.07	83.37
1917	91.46	142.50	111.26
1918	146.14	245.16	270.62
1919	133.84	199.26	234.32
1920	193.90	305.27	324.00

Secondhand bags of cotton, like secondhand bags of burlap, rise or fall in value with the price of the new bags.

COMPETITIVE CONDITIONS.

NEW BAGS.

Foreign bags imported for consumption are the same in construction and are used for the same purposes as those of domestic manufacture.

Our imports of new bags are limited to one type, the California or Pacific coast cental, which measures 22 by 36, weighs 12 ounces, and is used to sack 100 pounds of wheat. The use of these bags is confined to the Pacific coast. In reply to the commission's question, "Was foreign competition keen in 1914–1919 and did competition extend east of the Rocky Mountains?" the reply of bag manufacturers located east of the Rocky Mountains was invariably that they had not experienced foreign competition in new bags during these years. Likewise, manufacturers on the Pacific coast agree that foreign competition outside of the centals is negligible.

Foreign competition in this type is possible because the California cental is a standard bag, unprinted, and used in very large quantities. As India has practically no facilities for printing, her competition in this country is, of necessity, limited to a few types of bags. Likewise, as she must ship the bags a considerable distance and as her workmen are relatively unskilled, she did not find it profitable under the tariff rates of the act of 1913 to fill orders calling for small quantities, or for bags of special construction.

The extent to which American firms can participate in supplying the domestic demand for centals depends upon two factors: (1) The price of imported bags, and (2) whether it is possible to buy burlap for early shipment to compete with bags and burlap for later shipment.

There have been times when the imported bags could be landed in California at a lower price than that at which they could be manufactured locally. This has been due in part to the great fluctuations common in the jute trade, and in part to the fact that in their eagerness for the trade in centals Calcutta jute manufacturers often quote a price on bags, lower, notwithstanding the duty, than on the raw material, which is admitted free of duty. For instance, a Pacific coast manufacturer states that in August, 1920, it was not possible at that time to import cloth for manufacture into bags for use in the following season in competition with the price quoted by Calcutta firms on centals for delivery in 1921.

A larger part of such bags could be supplied by the local trade were it not for the fact that the price of burlap is generally higher in Calcutta during the last half of the year, which limits the amount of cloth brought forward during the last half of any year for the purpose of manufacturing for the coming harvest and for competing with foreign bags shipped during the first half of the year. Consequently, the percentage of grain bags manufactured by local dealers depends on their ability to secure burlap for shipment early enough to allow them time to manufacture it into bags.

Dependence upon India for the materials used in making jute bags not only serves as a handicap to manufacturers located on the Pacific coast, but makes it unprofitable for firms in the eastern part of the United States to engage in the manufacture of heavy twilled Cuban and Porto Rican sugar bags, of which about 70,000,000 pounds were

consumed yearly in Cuba during 1915–1918, and of which a large part is transshipped by way of the United States. The duty levied in the act of 1913 on the twilled material used in these bags and on bags made from this material was the same, 35 per cent, whereas in the case of the wheat bags used on the Pacific coast the cloth used was duty free and the bags made from the material were dutiable at 10 per cent. With a differential of 10 per cent the Pacific coast manufacturer could fill about one-third of the domestic requirements for centals, whereas with no differential on sugar bags, manufacturers on the eastern coast have not attempted to compete with the Calcutta jute mills in supplying the demand for Cuban and Porto Rican sugar bags.

Such bags may be made in this country and exported with the benefit of drawback. The president of a firm which makes a specialty of manufacturing 100-pound double sugar bags, and which ships heavy sugar bags to Cuba, does not think that this refund is a great enough inducement to engage in this trade. In this connection he says:

> We realize the fact that we would get a refund of 99 per cent duty for drawbacks on these bags, but the manufacturing cost would be very much more in this country than in Calcutta. It would also necessitate printing each bag with the word "drawback" on same, which would be an additional expense. Therefore, all these goods are generally bought by American manufacturing dealers from Calcutta houses, shipped in bond to either New York or New Orleans and sometimes to the Pacific coast and stored either in bonded warehouses in different places or shipped direct from the vessels arriving at the different ports to Cuba and Porto Rico.

The advantages which the Calcutta producer possesses enabling him to dominate in those markets which require large quantities of jute cloth and bags are:

1. A monopoly of the raw material, jute, and the consequent saving of freight charges.

2. An abundance of cheap docile labor whose wages are lower than those paid in this country, but whose efficiency is less. For instance, in June, 1918, the monthly wages of certain classes of Indian jute operatives were, on the basis of pre-war exchange rates, as follows: Carders, $2.91; rovers, $3.89; spinners, $4.78; winders, $5.84; weavers, $8.76.[5]

3. Longer working hours, both in the matter of hours worked per day by employees and the number of hours in which machinery is run. In 1913 a day's work in an Indian jute mill consisted of 13½ hours. Later this was changed to 11 hours. According to the latest available reports a change was made in 1916 from operating the mill 11 hours a day on a single shift to 13 hours per day on a three-shift system, each operative laboring 9 hours per day.

In the lack of skilled help, India is at a disadvantage. From the standpoint of productivity per employee, the output in India is much lower than in Dundee and in the United States. In Dundee, for instance, one operative can manage two looms, whereas in India the ratio is one operative per loom.

The most recent and most authoritative statement regarding the efficiency of the Indian jute operative is to be found in the report of the Indian Industrial Commission, 1916–1918, which was pub-

[5] Report of the Indian Industrial Commission, 1916–1918 (Cmd. 51), p. 15.

lished in the early part of 1919. After giving a statement of specimen wages paid to jute mill operatives, the report adds:

> Mill owners complain of the unwillingness of their laborers to respond to the stimulus of higher wages. The latter do not as a rule increase their output when engaged on piecework, but merely work fewer days in the week. The reasons for this were investigated in some detail by us. We have little doubt that the long hours passed in the uncongenial if not unhealthy surroundings of a factory from which the laborer returns at night to a dirty, crowded, and insanitary hovel, where his only relaxations are found in the liquor shop and the bazaar, are most unattractive to a man accustomed to rural life, and it is only the congestion existing in his native district and his desire to earn higher wages for a time that lead him to submit to such conditions. The mill workers of Bombay and Calcutta do not for the most part remain permanently at the mills, but return after a longer or shorter period to their native villages, though they eventually drift back in many cases to the mills. This practice affords a much needed change from the conditions under which the labor force lives and works, conditions which can never create a skilled and steady class of operatives. The laborers are, moreover, almost entirely uneducated * * *.[6]

As regards machinery, however, that used by the India jute mills is of the best. In making bags, only a minimum of machinery is required and of such simple types as are used the world over.

COMPARISON LANDED COSTS 1,000 CENTALS WITH COSTS OF MANUFACTURING THEM IN THIS COUNTRY.

The advantages of the Indian producer of centals can be best judged by comparing the landed cost per thousand grain bags with the cost of buying the cloth and making up the bags on the Pacific coast. Such data were supplied by the president of one of the largest concerns located west of the Rocky Mountains, who, in a letter dated December 15, 1920, furnishes the following information regarding purchases of wheat centals and cloth for their manufacture:

Wheat centals purchased in India, Dec. 9, 1920, for January–March shipment:		
Cost f. o. b., rupees 21⅜ per 1,000 bags		$53.44
Freight and insurance		6.30
Duty		5.35
Total landed cost per 1,000 bags		65.09
Cloth for wheat centals, purchased Dec. 8, 1920, for December shipment:		
Cost f. o. b., rupees 15⅛ per 1,000 yards		39.22
Freight and insurance		4.41
Cost per 1,000 yards		43.63
Cost of manufacturing centals on Pacific coast:		
1,300 yards required for 1,000 bags, at $43.63		56.71
Manufacturing cost—		
Twine	$2.32	
Labor	7.87	
Depreciation, maintenance and factory supplies	1.00	
		11.19
Total cost of manufacturing on Pacific coast, per 1,000 bags		67.90

Difference in favor of Indian manufacturer, $2.81 per thousand.

In estimating the above, the rupee is valued at 25 cents, which was its approximate value for the week previous to the forwarding of the above information.

India's advantages for manufacturing jute goods are so pronounced that two American concerns, which supply the greater

[6] Report of the Indian Industrial Commission, 1916–1918, p. 15.

part of the domestic requirements for cotton bagging, have built plants in Calcutta for the manufacture of such goods there, and still others are contemplating the erection of plants for making burlap and burlap bags for export to this country. Another cause that will tend to increase the competition is that a number of Calcutta houses have recently established branch offices on the Pacific coast.

COTTON BAGS.

The American manufacturer of cotton bags is free from competition in his home markets. This is likely to continue while the United States holds its present rank as a grower of cotton and as an exporter of cotton cloth.

SECONDHAND BAGS.

Imports from the United Kingdom during the 20 years 1900–1919 were in no year of sufficient volume to affect seriously the domestic market. Even if all of the bags exported from this source to the United States in the years 1900–1919 consisted of secondhand bags, and if none were designed for transshipment, the largest number for any one year in this period was in 1909, when the total was 6,243,612 bags; this is equal to about 2 per cent of the number of secondhand bags sold yearly in this country.

If Dundee bag producers possess any advantages over their American competitors, these advantages arise chiefly from the fact that the jute industry was started in Dundee and, consequently, the operatives have been longer experienced in this field.

The jute operatives are among the lowest paid of the textile workers in the United Kingdom. For the week ended February 21, 1920, from data submitted as to the wages of 10,737 mill employees working in Dundee and surrounding district, the average wages paid to a spinner were $7.78 and to a weaver $8.94 per week, which wages represent increases from 16.7 to 19.9 per cent over those prevailing during the previous year.[7]

The short working hours and the unemployment existing in the Scottish jute trade in the latter part of 1920, owing to the lack of coal and the depression of the trade as a whole, make the above data a more reliable index of the wages paid than that available for the last quarter of 1920.

TARIFF HISTORY.

BURLAP BAGS.

Jute products are mentioned for the first time in the act of 1846. Gunny bags were not specifically mentioned, however, until 1864. The act of 1883 distinguished three general classes of gunny bags: (1) Bagging for cotton or other manufactures, gunny bags, gunny cloth, valued at 7 cents or less per square yard, at 1½ cents per pound; valued at over 7 cents per square yard, 2 cents per pound; (2) bags and bagging and like manufactures not especially enumerated, except bagging for cotton gunny cloth, gunny bags, at 40 per centum ad valorem; and (3) gunny bags and gunny cloth, old refuse, fit only for remanufacture, free of duty.

[7] Labour Gazette, London, England, March, 1920.

As a part of the act of 1883 there was incorporated the provision relating to articles the growth, produce, and manufacture of the United States, which, when returned in the same condition as exported, were to be admitted free of duty. Bags were specifically referred to among "other vessels of American manufacture exported filled with American products, or exported empty and returned filled with American products."

In the act of 1890 the specific provisions relating to bags were: (1) Bags for grain made of burlap, at 2 cents per pound; (2) gunny bags and gunny cloths, old or refuse, fit only for remanufacture, free.

This arrangement was made the basis of the tariff legislation on bags passed in 1894, which combined "burlaps and bags for grain made of burlaps" into one paragraph of the free list, and continued in force the paragraph relating to bags fit only for remanufacture.

In 1897 a new and more complicated classification was introduced. The word "burlap" was omitted. One reason for the omission was probably the confusion that had arisen from the attempt to confine the word to cloths of jute. Bags were then classified on the basis of (1) weave—whether woven plain or not; (2) threads per square inch; and (3) whether unprocessed or processed. Imports of bags which had not been processed, by dyeing, printing, etc., and which had been manufactured from a cloth plain woven of single jute yarn, not exceeding 30 threads to the square inch, fell under a specific paragraph. The paragraph imposed a compound duty of seven-eighths of a cent per pound and 15 per cent ad valorem, a differential of one-fourth of 1 cent per pound over the cloth commonly used for bag-making purposes.

This classification and rate of duty were reenacted without change by the act of 1909. However, the differential between the bags and the cloth from which made was lowered one-sixteenth of a cent.

Under the act of 1913, bags, if made from plain woven cloth of single jute yarn and not processed, were dutiable at 10 per cent; if made from a cloth not plain woven, or one which has been processed, at 35 per cent ad valorem. Plain woven unprocessed jute cloths were free of duty, whereas those which had been processed were assessed at 10 per cent. Cloths not plain woven, such as twilled, were dutiable at 35 per cent.

The act of 1922 provides for bags or sacks made from fabrics composed wholly of jute, regardless of whether the fabric is plain woven or twilled or whether it is of single yarn or other than single yarn, at 1 cent per pound plus 10 per centum ad valorem when unprocessed, and 1 cent per pound plus 15 per centum ad valorem when processed—that is, bleached, dyed, printed, etc. The fabric, when either plain woven or other than plain woven, whether of single yarn or not, is dutiable at 1 cent per pound when not processed and at 1 cent per pound plus 10 per centum ad valorem when processed. These rates produce a 10 per cent differential on bags or sacks made from unprocessed fabric and a 5 per cent differential on bags or sacks made from processed fabric.

COTTON BAGS.

Cotton bags were specifically mentioned in one tariff act, that of 1872. The reference reads as follows:

On all bags, cotton bags and bagging, and all other like manufactures not herein otherwise provided for, except bagging for cotton composed wholly or in part of flax, hemp, jute, gunny cloth, gunny bags, or other material, 40 per centum ad valorem.

EFFECT OF TARIFFS ON IMPORTS.

Changes in tariff rates and tariff classifications during the last 30 years have only temporarily influenced imports for consumption. For instance, during the fiscal years 1892–1894, the three full years in which the act of 1890 was in force, imports of bags ranged between 28,129,000 and 25,875,000 pounds; the act of 1890 classified bags as "bags for grain made of burlaps" and assessed them at 2 cents a pound, which was equal to a duty of about 50 per cent. The elimination of this duty by the act of 1894 caused a twofold increase in the consumption of foreign bags. In the period 1895–1897 imports averaged about 50,000,000 pounds yearly. The passage of the act of 1897, which classified bags on the basis of threads per square inch, and according to whether the fabrics were processed or unprocessed, and which levied a compound duty of seven-eighths cent per pound and 15 per cent ad valorem, resulted in imports for consumption in 1899 contracting to the level existing in 1892–1894. The equivalent ad valorem of this compound rate which was subsequently reenacted in 1909 ranged in the years 1899–1913 between 35.41 and 25.75 per cent. From a total in 1899, amounting to 26,960,000 pounds, imports showed a marked tendency to increase. At one extreme stands the total of 30,037,000 pounds, in 1904; and at the other a total of 60,624,000 pounds in 1910. The decided and even growth of consumption of foreign bags during the period 1897–1913 may be judged from the fact that in the years 1900–1904 yearly consumption averaged 41,403,000 pounds, and in the years 1905–1909, 48,885,000 pounds.

With the passage of the act of 1913, which lowered the duty on bags to an ad valorem rate of 10 per cent, imports with 62,875,000 pounds for the fiscal year ended June 30, 1914, reached a new level. From this peak imports declined to 51,000,000 and 54,000,000 pounds for the years 1915 and 1916, and dropped to 35,000,000 pounds for 1917 and to 31,000,000 pounds for 1918.

Imports remained below the pre-war level during 1919 and 1920 when they amounted to 39,385,000 pounds and 38,799,000 pounds, respectively, but in 1921 they amounted to 70,632,965 pounds, which is somewhat in excess of the pre-war level.

STATISTICAL TABLES.

Production of bags other than paper in United States, by States, 1904–1919.

[From Federal Census.]

State.	1904	1909	1914	1919
California	$2,504,436			$13,414,851
Georgia		$604,366	$698,000	1,553,115
Illinois	808,784	965,442	2,876,000	7,933,704
Louisiana	4,076,226	5,351,661	7,804,000	18,310,111
Missouri	6,612,494			38,020,623
New York	3,647,701	4,986,279	8,962,000	26,821,937
North Carolina	1,310,742			
Ohio	1,500,754			
Oregon	957,000			
Pennsylvania	3,303,998			6,979,582
Tennessee		2,290,992	3,246,000	12,318,292
Virginia	216,863			4,840,831
All other	12,460,089	40,682,882	55,463,000	83,866,428
Total	37,399,087	54,881,622	79,049,000	214,059,474

Production of jute bags in the United States, 1917, 1918.

[From Census of War Commodities,[1] 1918—Textile fibers.]

	1917	1918[2]
	Number.	*Number.*
Sugar bags	9,144,995	4,357,978
Other bags:		
Under 10-ounce burlap	176,129,607	183,623,504
10-ounce burlap and over	157,711,032	156,152,534
Total	342,985,634	344,134,016

[1] 3,473 establishments engaged in jute trade or industry.
[2] Actual production for 5 months, Jan. 1–May 31, 1918. Estimated production for 7 months, June–December, 1918.

Imports of jute bags, by countries, 1895–1921.[1]

Fiscal year.	British India.		United Kingdom.		Other countries.		Total.	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
1895[2]		$634,076		$471,480		$4,887		$1,110,403
1896		854,591		673,207		24,057		1,551,855
1897		1,068,633		949,491		1,732		2,019,856
1898		398,475		158,466		9,108		566,049
1899[3]		621,217		356,209		17,323		994,749
1900		798,763		490,754		37,698		1,327,215
1901		1,424,053		675,039		21,578		2,120,670
1902		2,263,059		590,620		58,424		2,912,103
1903		1,562,234		484,978		13,865		2,061,077
1904		853,047		412,848		41,336		1,307,231
1905		1,192,835		532,913		19,932		1,745,680
1906		1,681,615		722,978		27,790		2,432,383
1907		3,143,225		1,146,697		40,608		4,330,530
1908		3,207,534		706,580		27,267		3,941,381
1909		2,469,290		547,912		7,278		3,024,480
1910		2,083,592		520,808		6,948		2,611,348
1911	40,284,383	2,108,935	9,416,638	371,528	11,668	2,789	49,712,689	2,483,252
1912	37,213,347	2,500,690	5,041,423	235,921	59,141	4,338	42,313,911	2,740,949
1913	41,766,878	3,606,994	9,837,109	648,676	196,050	12,713	51,800,037	4,268,383
1914	46,225,434	3,938,856	9,724,977	630,261	1,084,936	57,402	57,035,347	4,626,519
1915	46,995,575	3,376,610	3,463,558	242,075	519,391	26,420	50,978,524	3,645,105
1916	54,532,297	5,030,010	2,446,168	228,874	390,122	29,747	57,368,587	5,288,631
1917	33,055,272	2,784,209	950,620	100,987	1,215,221	98,045	35,221,113	2,983,241
1918	31,876,965	3,720,460	642,993	92,583	1,569,039	176,429	34,088,997	3,989,472
1919	46,187,993	5,970,311	30,695	1,240	1,033,623	138,820	47,252,311	6,110,371
1920	35,679,271	4,917,761	598,862	98,736	1,979,871	263,485	38,246,004	5,279,982
1921[4]	59,433,285	3,656,688	5,300,610	204,950	515,891	49,916	65,249,786	3,911,554

[1] Imports of bags, according to countries, 1884–1895, are included in the classification of "Bags and bagging and like manufactures."
[2] "Bags for grain made of burlap."
[3] "Bags of jute."
[4] Calendar year.

Imports of burlap bags for consumption—Revenue, 1891–1921.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.	Actual and computed duty per pound.
		Pounds.			*Cents.*	*Per cent.*	*Cents.*
1891 [1]	2 cents per pound	10,069,986	$474,184	$201,400	4.71	42.47	2.0
1892	do	28,129,081	1,238,748	562,582	4.40	45.42	2.0
1893	do	26,832,234	1,199,804	536,645	4.47	44.73	2.0
1894	do	25,875,955	1,076,022	517,519	4.16	48.10	2.0
1895	do	7,391,768	296,108	147,835	4.01	49.92	2.0
1895	Free	46,402,961	1,567,332		3.38		
1896	do	41,455,696	1,577,616		3.81		
1897	do	53,759,338	2,031,872		3.78		
1898	do	8,407,585	320,200		3.81		
1898 [2]	½ cent per pound plus 15 per cent ad valorem	18,708,790	878,873	295,533	4.70	33.63	1.58
1899	do	26,960,144	1,157,758	409,565	4.29	35.38	1.52
1900	do	33,687,575	1,444,052	511,374	4.29	35.41	1.52
1901	do	41,243,061	2,046,812	667,899	4.96	32.63	1.62
1902	do	58,322,789	2,919,199	948,204	5.00	32.48	1.63
1903	do	43,725,204	2,024,798	686,315	4.63	33.90	1.57
1904	do	30,037,085	1,401,502	473,050	4.67	33.75	1.57
1905	do	37,948,569	1,778,665	598,850	4.69	33.67	1.58
1906	do	41,182,380	2,295,633	704,691	5.57	30.70	1.71
1907	do	57,615,024	4,206,696	1,135,136	7.30	26.98	1.97
1908	do	54,879,574	3,780,658	1,047,298	6.89	27.70	1.91
1909	do	52,799,921	2,822,066	885,309	5.34	31.37	1.68
1910	do	60,624,770	2,934,987	970,715	4.84	33.08	1.60
1911	do	46,290,820	2,392,814	763,967	5.17	31.93	1.65
1912	do	46,465,122	2,937,332	847,170	6.32	28.84	1.82
1913	do	44,437,067	3,620,834	931,949	8.15	25.74	2.10
1914	do	18,946,071	1,571,785	401,546	8.30	25.55	2.12
1914 [3]	10 per cent	43,929,391	3,488,739	348,874	7.94	10.00	.79
1915	do	51,426,645	3,715,185	371,517	7.22	10.00	.72
1916	do	54,291,908	5,046,990	504,686	9.30	10.00	.93
1917	do	35,055,490	3,027,444	302,744	8.64	10.00	.86
1918	do	31,511,242	3,632,912	363,291	11.53	10.00	1.15
1919	do	39,385,045	5,245,056	524,506	13.32	10.00	1.33
1920	do	38,790,506	5,095,439	509,543	13.13	10.00	1.31
1921	do	70,632,765	7,278,194	727,819	10.30	10.00	1.03

[1] "Bags for grain made of burlap."
[2] "Bags or sacks made from plain woven fabrics, of single jute yarns, not dyed, colored, stained, painted, printed, or bleached, and not exceeding 30 threads to the square inch, counting the warp and filling."
[3] "Bags or sacks made from plain woven fabrics, of single jute yarns, not dyed, colored, stained, painted, printed, or bleached."

Domestic exports of bags made of vegetable fibers, 1891–1921.

[Fiscal years.]

Exported to—	1891	1892	1893	1894	1895	1896
United Kingdom	$48,936	$130,595	$176,450	$157,601	$158,093	$138,109
Canada	1,879	4,968	3,882	9,641	6,488	12,005
Cuba	4,934	4,670	9,673	8,133	3,571	270
Mexico	31,813	19,041	42,008	34,267	41,950	31,867
Dominican Republic	291	6,292	32,712	42,580	22,168	24,592
Guatemala	2,016	927	1,718	1,438	2,295	4,217
Argentina	310	230				
Belgium	2,598	46,323	35,624	46,508	16,883	19,207
Germany	9,459	70,397	33,125	41,317	4,927	3,619
All other countries	31,644	215,016	116,244	82,347	30,011	70,175
Total	133,880	498,459	451,436	423,832	286,386	304,061

Domestic exports of bags made of vegetable fibers, 1891–1921—Continued.

[Fiscal years.]

Exported to—	1897	1898	1899	1900	1901	1902
United Kingdom	$190,728	$239,348	$159,161	$146,808	$129,581	$84,552
Canada	14,834	13,612	18,678	12,302	26,809	20,027
Cuba	393	916	2,295	12,775	7,906	7,740
Mexico	35,716	42,444	45,806	17,069	101,149	109,268
Dominican Republic	35,073	7,552	3,093	993	2,707	20,732
Guatemala	3,621	1,404	726	684	779	954
Argentina	75	.....	.....	2,775	49,933	17,371
Uruguay	263	.....	.....	184	106	.....
Belgium	54,363	57,613	46,005	52,753	45,795	36,882
Germany	16,353	28,058	14,964	22,206	11,145	2,911
All other countries	146,954	165,979	115,865	129,191	93,982	116,025
Total	498,373	556,926	406,593	397,740	469,892	416,462

Exported to—	1903	1904	1905	1906	1907	1908
United Kingdom	$116,447	$55,080	$35,607	$126,430	$130,769	$100,268
Canada	17,383	17,600	44,156	55,374	44,946	43,370
Cuba	13,871	13,725	17,315	11,780	30,903	11,834
Mexico	87,837	79,641	66,930	73,926	82,650	151,258
Dominican Republic	3,045	3,178	1,767	1,599	4,128	5,115
Guatemala	1,324	1,292	2,186	4,129	3,084	2,299
Argentina	3,623	275	53,246	229,110	263,711	221,275
Uruguay	.....	.....	2,543	.....	353	436
Belgium	38,390	25,867	13,303	1,915	345	2,196
Germany	14,494	18,721	9,388	13,182	4,178	6,165
All other countries	91,426	86,034	75,443	92,931	141,132	103,124
Total	387,840	301,413	321,884	610,276	706,199	647,340

Exported to—	1909	1910	1911	1912	1913	1914
United Kingdom	$108,420	$97,111	$122,343	$160,744	$133,197	$177,765
Canada	46,345	35,911	38,831	96,670	127,986	67,739
Cuba	11,198	24,226	30,017	18,707	44,645	115,279
Mexico	74,871	71,786	31,754	26,645	24,382	49,178
Dominican Republic	3,444	1,674	38,294	8,159	10,993	14,376
Guatemala	3,098	2,543	1,338	5,871	4,264	3,530
Argentina	122,794	94,413	70,213	70,965	75,982	59,752
Uruguay	.....	.....	.....	.....	.....	1,529
Belgium	2,324	18,223	916	2,167	10,204	6,933
Germany	1,883	6,287	2,624	12,508	19,053	4,412
All other countries	92,177	61,835	73,534	110,151	219,550	182,990
Total	466,554	414,009	409,864	512,587	670,256	683,483

Exported to—	1915	1916	1917	1918	1919	1920
United Kingdom	$367,025	$65,769	$204,353	$70,419	$23,527	$64,504
Canada	103,784	286,391	299,217	379,008	252,551	718,632
Cuba	504,843	441,632	318,079	659,536	384,684	566,648
Mexico	130,397	199,459	225,452	225,706	521,416	365,588
Dominican Republic	81,267	76,764	162,925	639,588	215,126	208,168
Guatemala	37,311	108,332	44,293	57,416	138,376	78,693
Argentina	206,080	160,081	99,306	21,463	79,848	3,690,486
Uruguay	29,416	125,536	19,017	14,748	55,770	.....
Belgium	.....	8,072	21,428	6,766	36,004	10,377
Germany	.....	.....	.....	.....	.....	66,853
All other countries	335,531	772,652	652,184	1,040,706	1,516,010	1,390,255
Total	1,795,654	2,244,688	2,046,254	3,115,356	3,223,312	7,160,204

Exported to—	1920 [1]	1921 [1]
United Kingdom	$78,545	$4,702
Canada	861,682	288,662
Cuba	610,097	134,045
Mexico	519,770	320,848
Dominican Republic	298,564	89,999
Guatemala	32,328	8,847
Argentina	1,619,454	55,650
Uruguay	6,452	2,497
Belgium	12,881	6,871
Germany	97,331	20,721
All other countries	.....	316,011
Total	5,951,669	1,248,853

[1] Calendar year.

Actual and relative prices of burlap (40-inch, 10½ ounces) in India, United States, and United Kingdom, 1913–1918.

[From "History of Prices during the War," by War Industries Board, 1919.]

	Actual price.			Relative price.			
	India (Calcutta), per 100 yards.	United States (New York), per yard.	United Kingdom (Liverpool), each.	India.[1]	United States.[1]	United Kingdom.[2]	United States.[2]
	Rupees.		*S. d.*				
Base price	13.00	$0.0515	0 4.44				
1913—year		.0802	0 3.80			86	119
Quarters—							
First		.0886	3.38			76	131
Second		.0787	0 3.56			80	117
Third		.0800	0 3.75			85	119
Fourth		.0748	0 4.52			102	111
1914—year	[3] 10.81	.0620	0 4.69	[3] 83	[3] 128	106	92
Quarters—							
First		.0598	0 4.70			106	89
Second		.0565	0 4.81			108	84
Third	11.75	.0789	0 4.63	90	153	104	117
Fourth	9.88	.0557	0 4.61	76	108	104	83
1915—year	16.95	.0706	0 4.61	130	137	104	105
Quarters—							
First	13.04	.0508	0 4.79	100	99	108	75
Second	16.75	.0715	0 5.08	129	139	114	106
Third	19.58	.0778	0 4.38	151	151	99	115
Fourth	18.42	.0845	0 4.19	142	164	94	125
1916—year	20.29	.0939	0 5.08	156	182	114	139
Quarters—							
First	23.67	.1134	0 4.40	182	220	99	168
Second	18.25	.0909	0 4.79	140	176	108	135
Third	18.92	.0807	0 5.06	146	157	114	120
Fourth	20.33	.0909	0 6.08	156	176	137	135
1917—year	19.44	.1337	0 9.21	168	260	207	198
Quarters—							
First	13.54	.0937	0 6.46	104	182	145	139
Second	15.35	.1075	0 6.30	118	209	142	159
Third	22.67	.1417	0 9.63	174	275	217	210
Fourth	39.75	.1920	1 2.46	276	373	326	284
1918—year		.2113	1 1.61			307	313
Quarters—							
First		.2155	1 2.17			319	319
Second		.2408	1 0.92			291	357
Third		.2386	1 0.67			285	353
Fourth		.1505	1 2.67			330	223

[1] Price in July, 1914=100.
[2] Average price July, 1913–June, 1914=100.
[3] Average of last six months of 1914.

Wholesale prices of jute gunny bags (No. 2 twill, 44 by 26½ inches) at Calcutta, 1904–1921.

[From Table No. 7, "Prices and Wages in India," Department of Statistics, India.]

[Per 100 bags. Rupee=$0.3244.]

Year.	January.	July.	Year.	January.	July.
1904	$7.6234	$7.8667	1913	$12.7327	$12.6516
1905	8.7588	7.9478	1914	13.7870	13.7870
1906	10.3321	10.2186	1915	11.0296	14.1114
1907	10.9485	12.0028	1916	13.9492	13.1382
1908	10.7052	9.2454	1917	14.4358	13.9492
1909	9.4887	8.5155	1918	22.0592	21.7348
1910	9.2454	[1] 8.8399	1919	18.8152	19.7884
1911	9.7320	10.6241	1920	21.2482	15.7334
1912	11.6784	11.8406	1921	12.9760	

[1] 2½-pound, 44 by 26½ inches, from 1910.

Production of jute bags in 50 leading establishments, 1917, 1918.

	Total number (3,473 establishments).	50 leading establishments.		All other (3,423 establishments).
		Number.	Per cent of total.	
1917	342,985,634	271,976,180	79.3	71,009,454
1918 [1]	344,134,016	312,093,738	90.7	32,040,278

[1] Actual production for 5 months, estimated requirements for 7 months.

Rates of duty, bags of jute or cotton, 1883–1922.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1883....	649	* * * bags, * * * of American manufacture, exported filled with American products, or exported empty and returned filled with foreign products. * * * but proof of the identity of such articles shall be made under regulations to be prescribed by the Secretary of the Treasury; * * * *And provided further*, That bags, other than of American manufacture, in which grain shall have been actually exported from the United States, may be returned empty to the United States, free of duty, under regulations to be prescribed by the Secretary of the Treasury.	Free.
1890....	493	* * * bags, * * * of American manufacture, exported filled with American products, or exported empty and returned filled with foreign products, * * * but proof of the identity of such articles shall be made under general regulations to be prescribed by the Secretary of the Treasury; * * *	Do.
1894....	387	* * * bags, * * * of American manufacture, exported filled with American products, or exported empty and returned filled with foreign products, * * * but proof of the identity of such articles shall be made, under general regulations to be prescribed by the Secretary of the Treasury, but the exemption of bags from duty shall apply only to such domestic bags as may be imported by the exporter thereof * * *.	Do.
1897....	483	.....do.....	Do.
1909....	500	.....do.....	Do.
1913....	404	.....do.....	Do.
1922....	1514	.....do.....	Do.
1883....	334	* * * manufactures of flax, jute, or hemp, or of which flax, jute, or hemp shall be the component material of chief value, not specially enumerated or provided for in this act.	35 per cent ad valorem.
	342	Bags and bagging, and like manufactures, not specially enumerated or provided for in this act (except bagging for cotton), composed wholly or in part of flax, hemp, jute, gunny cloth, gunny bags, or other material.	40 per cent ad valorem.
1890....	365	Bags for grain made of burlaps.....	2 cents per pound.
	374	All manufactures of jute, or other vegetable fiber, except flax, hemp, or cotton, or of which jute, or other vegetable fiber, except flax, hemp, or cotton, is the component material of chief value, not specially provided for in this act—	
		Valued at 5 cents per pound or less.....	Do.
		Valued above 5 cents per pound.....	40 per cent ad valorem.
1894....	277	All manufactures of flax, hemp, jute, or other vegetable fiber, except cotton, or of which these substances or either of them is the component material of chief value, not specially provided for in this act.	35 per cent ad valorem.
	424½	Burlaps, and bags for grain made of burlaps.....	Free.
1897....	343	Bags or sacks made from plain woven fabrics, of single jute yarns, not dyed, colored, stained, painted, printed, or bleached, and not exceeding 30 threads to the square inch, counting the warp and filling.	⅛ cent per pound and 15 per cent ad valorem.
	347	All manufactures of flax, hemp, ramie, or other vegetable fiber, or of which these substances, or either of them, is the component material of chief value, not specially provided for in this act.	45 per cent ad valorem.
1909....	354	Bags or sacks made from plain woven fabrics, of single jute yarns, not dyed, colored, stained, painted, printed, or bleached, and not exceeding 30 threads to the square inch, counting the warp and filling.	⅛ cent per pound and 15 per cent ad valorem.
	358	* * * all manufactures of flax, hemp, ramie, or other vegetable fiber, or of which these substances, or any of them, is the component material of chief value, not specially provided for in this section.	45 per cent ad valorem.

Rates of duty, bags of jute or cotton, 1883–1922—Continued.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1913....	281	Bags or sacks made from plain woven fabrics, of single jute yarns, not dyed, colored, painted, printed, or bleached.	10 per cent ad valorem.
	284	* * * all manufactures of flax, hemp, ramie, or other vegetable fiber, or of which these substances, or any of them, is the component material of chief value, not specially provided for in this section.	35 per cent ad valorem
1922....	1018	Bags or sacks made from plain woven fabrics of single jute yarns or from twilled or other fabrics composed wholly of jute—	
		Not bleached, printed, stenciled, painted, dyed, colored, nor rendered noninflammable.	1 cent per pound and 10 per centum ad valorem;
		Bleached, printed, stenciled, painted, dyed, colored, or rendered noninflammable.	1 cent per pound and 15 per centum ad valorem.
	1021	* * * all manufactures of vegetable fiber other than cotton, or of which such fibers or any of them is the component material of chief value, not specially provided for. (Bags of cotton, as heretofore, fall within the general provisions for manufactures of cotton.)	40 per centum ad valorem.

Court and Treasury Decisions.

Secondhand bags made from plain woven jute fabrics, containing identification marks consisting of two or three letters stenciled thereon and covering an insignificant amount of the surface of the bags, are not dyed, colored, stained, painted, or printed, within this paragraph, and are dutiable thereunder, rather than as manufactures of vegetable fiber under paragraph 284. (G. A. 7705, T. D. 35268, of 1915.) Similar bags, stenciled with identification marks or with the words "for drawback" with the name of the manufacturer (Abstract 38362, of 1915) and having words, letters, and numbers stenciled thereon for identification only (Abstract 38434, of 1915) were also classified under this paragraph. However, jute bags having a substantial portion of their surface dyed, colored, stained, painted, or printed, although by stenciling, and not for identification, are excluded from this paragraph and are dutiable under paragraph 284, G. A. 5177, T. D. 23870, of 1902, cited. (G. A. 8058, T. D. 37158, of 1917.) Bags with a brand covering about one-third of the surface and for other than mere identification were likewise excluded from this paragraph following the last-mentioned case. (Abstract 42569, of 1918.)

Bags with a colored stripe down the center of each side composed of a single jute yarn of the warp, trivial in value and character and not constituting a necessary or substantial part of the article, were held not to be colored or dyed. (G. A. 5105, T. D. 23618, of 1902.) Bags with two stripes of colored yarns on each side, constituting about 7.5 per cent of the warp (G. A. 4997, T. D. 23286, of 1901) and bags with a colored stripe about 1 inch wide down the center of each side composed of five warp threads (G. A. 5105, T. D. 23618, of 1902) were excluded from the provision "not dyed, colored, etc.," and are dutiable under paragraph 284.

Twilled jute bags are not within this paragraph as made from plain woven fabrics, but are likewise dutiable under paragraph 284. (Abstract 37088, T. D. 35020, of 1914, following G. A. 6063, T. D. 26445, of 1905.)

Old secondhand jute bags, twill woven or colored, which had become so worn, torn, and cut as to be unsuitable for reuse as bags,

but which were shown to be almost entirely used for the patching of cotton bales and for the covering of barrel heads, etc., were held dutiable under paragraph 384 of the act of 1913 as waste not specifically provided for, and not under paragraph 284 as manufactures of vegetable fiber. (G. A. 8374, T. D. 38506, of 1920.) Jute sugar bags, twill woven and printed, apparently of whole and sound fabric, with the exception that some of them were sticky with sugar, but which the appraiser reported could be used as containers after being washed, and which were indiscriminately mixed, were held dutiable under paragraph 284 as manufactures of vegetable fiber. (G. A. 8397, T. D. 38572, of 1920.)

APPENDIX.

Since the preparation of this survey the tariff act of 1922 has been enacted. It changes the classifications and provides rates of duty different from those fixed in the act of 1913, but the effect of these differences on the relationship of the domestic to the foreign industry can not be definitely measured until imports have been recorded under the new provisions.

The text of the act of 1913 and of the act of 1922 relating to bags of jute or cotton follows:

Act of 1913.	Act of 1922.
PAR. 231. Bags or sacks made from plain woven fabrics, of single jute yarns, not dyed, colored, stained, painted, printed, or bleached, 10 per centum ad valorem.	PAR. 1018. Bags or sacks made from plain woven fabrics of single jute yarns or from twilled or other fabrics composed wholly of jute, not bleached, printed, stenciled, painted, dyed, colored, nor rendered noninflammable, 1 cent per pound and 10 per centum ad valorem; bleached, printed, stenciled, painted, dyed, colored, or rendered noninflammable, 1 cent per pound and 15 per centum ad valorem.
PAR. 284. All woven articles, finished or unfinished, and all manufactures of flax, hemp, ramie, or other vegetable fiber, or of which these substances, or any of them, is the component material of chief value, not specially provided for in this section, 35 per centum ad valorem.	
PAR. 266. All articles made from cotton cloth, whether finished or unfinished, and all manufactures of cotton or of which cotton is the component material of chief value, not specially provided for in this section, 30 per centum ad valorem.	PAR. 921. All articles made from cotton cloth, whether finished or unfinished, and all manufactures of cotton or of which cotton is the component material of chief value, not specially provided for, 40 per centum ad valorem.

A further comparison, relating to rates and differentials on jute fabrics and bags or sacks made from such fabrics, follows:

	Rate.			Differential.	
	Act of 1913.	Act of 1922.		Act of 1913.	Act of 1922.
	Ad valorem.	Specific (per pound).	Ad valorem.		
Plain woven fabric:	*Per cent.*	*Cents.*	*Per cent.*	*Per cent.*	*Per cent.*
Of single jute yarn—					
Not processed	Free.	1			
Processed	10	1	10		
Of other than single jute yarn—					
Not processed	35	1			
Processed	35	1	10		
Bags made from plain woven fabric:					
Of single jute yarn—					
Not processed	10	1	10	10	10
Processed	35	1	15	25	5
Of other than single jute yarn—					
Not processed	35	1	10	None.	10
Processed	35	1	15	None.	5
Jute fabric other than plain woven, of single or other than single jute yarn:					
Not processed	35	1			
Processed	35	1	10		
Bags made of jute fabric other than plain woven, of single or other than single jute yarn:					
Not processed	35	1	10	None.	10
Processed	35	1	15	None.	5

The act of 1913 provided a 10 per cent differential on bags or sacks made from non-processed, plain woven fabric of single jute yarn, and this differential is the same in the act of 1922. When the same sort of bags or sacks are made from processed fabric, however, the differential is 5 per cent in the act of 1922 as against 25 per cent in the act of 1913. The 25 per cent differential in the act of 1913 did not result from legislative intent but existed rather by reason of the fact that these articles were not specially provided for and fell under the basket paragraph (284) at 35 per cent ad valorem, while the fabric from which they are made was specially provided for at 10 per cent ad valorem in paragraph 279.

Other differentials provided in the act of 1922 did not exist under the act of 1913.

It should be noted that domestic manufacturers have held that the production of jute bags other than burlap in the United States could not be profitably undertaken in competition with India without a differential between the duty on the twilled cloth used in the manufacture of such bags and the duty on the finished bag (p. 21).

Bags produced in the United States are printed with various brands, as ordered, whereas, owing to India's limited facilities for printing and the fact that an additional duty of 25 per cent ad valorem was levied on printed bags under the act of 1913, imported bags have been unprinted (p. 20). The act of 1922, as before pointed out, levies an additional duty of 5 per cent on bags made from fabric which has been printed or otherwise processed.

The jute manufacturing industry in India is primarily engaged in the production of cloth. The domestic industry encounters competition in but one class of bag, the California or Pacific coast cental, which is a standard bag, unprinted, that is used in large quantities.

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UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPHS 1009, 1010, and 1011 OF THE TARIFF ACT OF 1922

AND RELATED ARTICLES IN OTHER PARAGRAPHS

WOVEN FABRICS OF FLAX, HEMP, AND RAMIE

Paragraph 1009:

Crash, Toweling, Glass Cloth, and other articles containing over 30 and not over 100 threads to the square inch, weighing not less than 4½ nor more than 12 ounces per square yard, and exceeding 12 but not exceeding 24 inches in width.

Tailors' Paddings exceeding 30 but not exceeding 110 threads to the square inch, and weighing not less than 4½ nor more than 12 ounces per square yard.

Paragraph 1010:

Sailcloth, Canvas, and all other fabrics not otherwise provided for.

Paragraph 1011:

Cambric, Lawn, and other plain-woven fabrics weighing less than 4½ ounces per square yard.

Paragraph 1012:

Pile Fabrics, and Manufactures thereof, of vegetable fiber other than cotton.

Paragraph 1013:

Table Damask, and Manufactures thereof, of vegetable fiber other than cotton.

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Gift
U.S. Tariff Com.
6-4-28

PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission. These surveys have been prepared in accordance with the provisions of the tariff act in force at the time of their preparation and cover all the articles and commodities provided for in the acts of 1913 and 1922, and others not specially provided for.

In some cases two or more paragraphs have been combined in one survey. In doing this, industrial relationship of the articles has been considered. In those instances where an article or a commodity has been treated under a preceding paragraph, reference to this fact is made. In cases where one grade of an article or commodity is dutiable and another grade of the same article or commodity is on the free list, the entire treatment is carried out under the dutiable paragraph.

A separate pamphlet listing the principal subjects investigated and reported upon has been published. It contains:

(1) An alphabetical index of the articles and commodities provided for in the tariff acts of 1913 and 1922, showing the paragraph in the acts in which the article or commodity is provided for, and, if discussed under a different paragraph, the number of such paragraph.

(2) The number of the survey in which the article or commodity is discussed.

Special and miscellaneous reports, which are unnumbered, are also included in the index.

Thus, by use of the index, the exact location of the survey or report relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Daniel W. Alexander, of the textile division of the commission's staff, and of others.

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(Not including pile fabrics, or table damask.)

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WOVEN FABRICS OF FLAX, HEMP, OR RAMIE.

SECTION I.

FLAX, HEMP, OR RAMIE FABRICS, PLAIN OR FIGURED.

(Not including pile fabrics or table damask.)

TARIFF ACT OF 1922.

Paragraph 1009. Woven fabrics, not including articles finished or unfinished, of flax, hemp, or ramie, or of which these substances or any of them is the component material of chief value (except such as are commonly used as paddings or interlinings in clothing), exceeding 30 and not exceeding 100 threads to the square inch, counting the warp and filling, weighing not less than 4½ and not more than 12 ounces per square yard, and exceeding 12 inches but not exceeding 24 inches in width, 55 per centum ad valorem. Woven fabrics, such as are commonly used for paddings or interlinings in clothing, composed wholly or in chief value of flax, or hemp, or of which these substances or either of them is the component material of chief value, exceeding 30 and not exceeding 110 threads to the square inch, counting the warp and filling, and weighing not less than 4½ and not more than 12 ounces per square yard, 55 per centum ad valorem; composed wholly or in chief value of jute, exceeding 30 threads to the square inch, counting the warp and filling, and weighing not less than 4½ ounces and not more than 12 ounces per square yard, 50 per centum ad valorem.

Paragraph 1010. Woven fabrics, not including articles finished or unfinished, of flax, hemp, ramie, or other vegetable fiber except cotton, or of which these substances or any of them is the component material of chief value, not specially provided for, 40 per centum ad valorem.

Paragraph 1011. Plain-woven fabrics, not including articles finished or unfinished, of flax, hemp, ramie, or other vegetable fiber, except cotton, weighing less than 4½ ounces per square yard, 35 per centum ad valorem.

SUMMARY.

Both imports and domestic production of hemp or ramie fabrics are negligible, therefore the fabrics to be considered are almost entirely those of flax.

The United States is the world's largest user of flax fabrics, but depends upon imports to supply the bulk of its requirements. The domestic production is comparatively small and confined mainly to coarse-yarn fabrics, particularly crashes, and a small output of goods, such as tailors' paddings, made from somewhat finer yarns.

Imports consist chiefly of lightweight fabrics, woven of fine yarn and usually highly finished, smaller quantities of tailors' paddings, and still smaller quantities of very heavy fabrics, such as canvas and sailcloth. Neither the very light nor the very heavy fabrics is produced in the United States and the domestic production of tailors' paddings dates only from 1915.

Ireland is the world's largest producer of linen fabrics, specializing in the production of the finer qualities. Imports into the United States originate principally in Ireland and Scotland, with smaller quantities coming from Belgium, France, and other countries.

Flax, hemp, and ramie are bast fibers, those obtained from the stalks and stems of the plant. Because of the similarity of these three fibers and the fact that they are practically interchangeable, fabrics made therefrom have received the same tariff treatment since 1897.

The term "hemp" as here used refers to the true soft hemp (*Cannabis sativa*), and does not include manila or other fibers which are sometimes, though incorrectly, listed under this heading.

The domestic production of woven fabrics of flax, hemp, or ramie is practically restricted to crash, huck toweling, tailors' paddings, and glass checks. While this entire production encounters foreign competition, such goods constitute a minor part of imports and are mainly dutiable at 55 per cent ad valorem, whereas the major part of imports, consisting of the lighter weight and more closely woven fabrics, are not manufactured in the United States and are dutiable at either 40 per cent ad valorem under paragraph 1010 or at 35 per cent ad valorem under paragraph 1011.

A wider range of medium-grade fabrics, as well as some coarse, heavy fabrics, can be produced in domestic mills without changing equipment. By employing broader looms a still wider range of fabrics can be produced. There is no apparent reason why the domestic linen industry can not manufacture, with the use of broad looms of domestic make, such goods as dress and suiting linen, embroidery linen, canvas, sailcloth, and certain grades of table damask. As linen fabrics increase in fineness of weave, they are usually more highly bleached and finished. Skilled operatives are essential for satisfactory results in manufacturing high-grade linens, and such operatives are not available in the United States.

In linen of fine quality, labor costs constitute a greater proportion of the total cost than is the case with the lower quality goods. Thus, owing to lower wage rates in Europe, the domestic producer would find keener competition in the finer qualities. Manufacturing costs also increase with the quality of the product much more rapidly in the case of linen than in the case of cotton goods, which means that the advantage of cotton goods in competing with linen for the market grows greater as the quality of the fabric becomes finer.

Since imported goods comparable to domestic products are dutiable under paragraph 1009 and imports of other goods are dutiable under paragraph 1010 or 1011, this report will treat competitive fabrics in one group and noncompetitive fabrics in another.

General Information.

DESCRIPTION AND USES.

COMPETITIVE FABRICS.

Fabrics falling in this class are chiefly crashes or the relatively coarse linens. They constitute the bulk of the domestic production of linen fabrics.

With the exception of a small amount of huck toweling, imports under this group are plain-woven fabrics.

(A) *Crashes.*—Crashes are coarse, plain-woven union or linen fabrics. The finer grades are used, to a limited extent, for dress linens, suits, and embroidery linen. The chief use, however, is for

dish toweling. Crashes intended for purposes other than for toweling are made in wider widths than the toweling crash. Wide looms, of which there are few in the domestic linen industry, are required to weave such fabrics.

Crashes for toweling form all but a small percentage of the domestic production of linen fabrics. In width they range from 12½ to 20½ inches and in weight from 5 to 8 ounces to the square yard. The range in thread count is from 37 to 75 threads per square inch, the bulk having about 50 threads. Crashes are sold either unbleached or bleached. As a rule they have a red or blue border.

On the basis of materials used, crashes fall into three groups, with the domestic production about equally divided among the three: (1) All-linen crashes, which constitute about three-fourths of those imported; (2) union crashes, in which the warp is pure cotton and the filling pure flax; and (3) mixed-yarn crashes, which are peculiarly a domestic product. In these mixed-yarn crashes the yarn is a mixture of flax noils (the waste from carding flax tow) and cotton spun together, so that neither the warp nor the weft is distinctly flax or cotton. The cotton content, however, usually exceeds the flax in weight.

Embroidery linens resemble crashes, but are usually starched and are woven of finer yarns.

A number of different types of linens are used for embroidery purposes, such as shrunk embroidery linens, white art linens, and brown embroidery linens. These range in width from 18 to 54 inches. The majority have less than 70 threads to the square inch and weigh less than 12 ounces per square yard. Embroidery linens, when ornamented, are used for table covers and runners.

(B) *Glass cloths.*—Glass cloths, or glass checks, are used for drying glasses. The domestic production is limited to one company, which has produced them only on a small scale. Glass cloths have a smooth glazed surface, and are usually divided into squares by the intersection of red or blue threads. They run in width from 16 to 24 inches; in threads to the square inch, from 60 to 80; and in weight per square yard, from 4½ to 6½ ounces.

(C) *Toweling, huck.*—Most of the toweling produced and consumed in the United States is below 100 per square inch in thread count and from 5 to 7 ounces per square yard in weight. This is the coarser-grade fabric; the finer grade, which contains as high as 200 threads to the square inch, is not generally made in the United States.

(D) *Tailors' paddings.*—Paddings, or interlinings, are stiffening material inserted in wearing apparel between the outer cloth and the lining in order that the garment may keep its proper shape. A linear yard of 22 or 24 inch material is required for the two fronts of a coat. Linen paddings, which are firm but flexible, are the most popular type of padding, forming, prior to the war, as much as three-fourths of the total domestic consumption. All-jute paddings, which are the cheapest and coarsest made, constitute the bulk of the remainder.[1] A marked increase since 1914 in the price of linen paddings has given a decided impetus to the manufacture of all-jute and union paddings, these latter composed mostly of flax and jute or

[1] See commission's survey on Jute Cloths, J-7, p. 34.

55033—J-8—23——2

of jute and cotton. The production of paddings marks a step forward in the development of the domestic linen industry. As compared with crashes, paddings are woven from finer yarns, have more threads to the square inch, and a more elaborate finish. Flax paddings are distinguished from the general run of linen fabrics by a starched and glazed appearance. This results from their being subjected to a sizing process by which the yarns are permeated with a substance, partially waterproofing the fabric, and causing it to resist the softening influence of moisture in the processes of cleaning and pressing or in rainy weather. They are plain-woven, unbleached fabrics 22 or 24 inches in width.

Paddings range in weight from about 5 to 10 ounces per square yard and in thread count from about 40 to 100 threads to the square inch; when made for special purposes these limits are occasionally exceeded. Those made of flax run to only 7.5 ounces per square yard in weight and not lower than 60 in thread count.

An analysis of 21 representative paddings manufactured in Ireland and Belgium gives the average yarn count used in both warp and weft as 23.7 lea. The actual yarn used, however, was probably a little below this number, because the samples analyzed had been sized and consequently the yarn was heavier than that actually spun. As a rule the warp and filling yarns were within 1 or 2 lea of each other.

NONCOMPETITIVE FABRICS.

(A) *Cambrics and sheers.*—These fabrics are imported for manufacture into handkerchiefs. They are finely woven and highly bleached. The predominating width is 36 inches. In weight they range from 1½ to 3 ounces per square yard and in thread count from 100 to 400 threads to the square inch, with those from 100 to 200 threads forming the bulk of the domestic consumption. The yarns employed run in lea from 90 to 160 in warp and from 120 to 190 in weft. The finest yarn spun commercially in the United States rarely exceeds 40 lea.

(B) *Dress and suiting linens.*—Suitings for women's dresses and men's suits are imported white or colored. A considerable part consists of colored crash 36 inches wide with about 50 threads to the square inch.

(C) *Blouse and waist linens.*—These fabrics are imported in a wide variety. They range from about 100 to 200 in threads per square inch.

(D) *Household linens.*—Imports of these fabrics are chiefly for further manufacture into sheets, pillowcases, and furniture coverings or slips.

Imports of linen sheeting and tubular linens for pillowcases form an insignificant part of the total imports of linen goods. Sheetings are usually woven in widths of 72 to 90 inches. In weight they range from about 4 to 4½ ounces per square yard and in thread count from about 100 to 160 to the square inch. Tubular linens for pillowcases have about the same thread count and weight as sheetings.

The small amount of furniture covering imported is mainly coutil—a strong twill cloth with herringbone stripes.

(E) *Heavy fabrics.*—The domestic consumption of heavy fabrics for [illegible]th, tarpaulin, etc., is the smallest of any of the types described. [illegible]due chiefly to the extensive use of domestic cotton duck.

Sailcloth represents all but a small part of the heavy linens consumed. This is used chiefly in the construction, maintenance, and repair of foreign vessels. It is usually woven in 24-inch widths with about 14 to 48 ends of ply yarn in the warp and from 12 to 36 single threads in the weft.

Tarpaulins are usually imported ready for use. The small amount imported in the untreated state for waterproofing in domestic mills comes in 41-inch widths.

(F) *Figured fabrics.*—Figured linen fabrics consist chiefly of table damask, huck toweling, and diaper cloth.

Small quantities of huck toweling are imported. That which competes with the domestic product is mentioned under "Competitive linens." The remainder, that which exceeds 100 threads to the square inch, is noncompetitive and pays a lower rate of duty; it ranges from 15 to 20 inches in width, contains from 100 to 200 threads to the square inch, and weighs from 5¼ to 7½ ounces per square yard.

Diaper cloth is usually woven with a filling yarn which is soft and coarse, as compared to the warp. This, combined with the filling-face weave (generally only one end out of four being up on each pick), makes a very soft-faced cloth. The cloth is further softened by the finishing processes—treating with an alkaline solution of caustic soda, bleaching, washing, and drying. Diaper cloth of vegetable fiber other than cotton is not in general use in the United States; it is not produced in domestic mills and imports are small.

Table damask is discussed in Section III.

TARIFF HISTORY.

In the act of 1883 fabrics of flax, hemp, or ramie were provided for on the basis of grade or quality, viz, brown and bleached linens, ducks, canvas, paddings, cot bottoms, diapers, crash, huckabacks, lawns, and Russia and other sheetings, brown or white, 35 per cent ad valorem; sail duck, or canvas for sails, 30 per cent ad valorem; other manufactures, including manufactures of ramie, 35 per cent ad valorem.

This method of classification was followed in some subsequent acts but not in others. Thus in the act of 1890 fabrics of flax or hemp containing 100 or less threads per square inch were dutiable at 50 per cent ad valorem, while fabrics of flax containing more than 100 threads to the square inch were dutiable at 35 per cent ad valorem, and fabrics of hemp or ramie containing more than 100 threads to the square inch were dutiable at 2 cents per pound when valued at 5 cents per pound or less and at 40 per cent ad valorem when valued above 5 cents per pound.

In the act of 1894 all flax, hemp, or ramie fabrics, regardless of construction or quality, fell under general provisions at 35 per cent ad valorem.

In the act of 1897 all fabrics of flax, hemp, or ramie weighing not less than 4½ ounces per square yard were dutiable at not less than 50 per cent ad valorem. This minimum rate of 50 per cent applied when the compound rates did not amount to an equivalent ad valorem rate of 50 per cent. The compound rates were on a graduated basis and ranged from 1¾ cents per square yard plus 30 per cent ad valorem on fabrics weighing 4½ ounces or more per square yard and containing not more than 60 threads per square

inch to 9 cents per square yard plus 30 per cent ad valorem on fabrics weighing 4½ ounces or more per square yard and containing more than 180 threads per square inch. Fabrics weighing less than 4½ ounces per square yard and containing more than 100 threads to the square inch were dutiable at 35 per cent ad valorem, and fabrics weighing less than 4½ ounces per square yard and containing 100 or less threads per square inch were dutiable under a general provision at 45 per cent ad valorem.

The provisions of the act of 1909 with respect to flax, hemp, or ramie fabrics were the same as those in the act of 1897, except that the act of 1909 provided separately for fabrics weighing less than 4½ ounces per square yard and containing 100 or less threads per square inch, while the act of 1897 did not provide separately for such fabrics.

The act of 1913 provided for all plain-woven fabrics of flax, hemp, or ramie, at 30 per cent ad valorem; fabrics other than plain-woven falling under a general provision at 35 per cent ad valorem.

In the act of 1922 the basis employed is again that of construction—threads per square inch, weight per square yard, and width. The duties range from 35 to 55 per cent ad valorem, the higher rates applying to such fabrics as are comparable with the domestic product, or the medium grade fabrics, while the lower rates apply to the non-competitive fabrics, or those which are either very heavy, such as sailcloth, or those which are of light weight, such as cambric, neither of which grades is produced in the United States.

Prior to the act of 1922 paddings had never been specially provided for; they had been dutiable along with other fabrics of flax or hemp. They are specially provided for in the act of 1922 because the provisions applying to other competitive fabrics are not broad enough to cover the range in paddings.

DOMESTIC PRODUCTION.

The output of the domestic linen industry consists of woven goods, thread, twine, and yarns. Comparatively small quantities of yarn are produced for sale, as most of it is consumed in the mills where spun, in the production of fabric, thread, and twine.

Statistics concerning domestic production show that in 1899 there were 18 establishments engaged primarily in the production of linen goods. In addition to thread, twine, and yarn, these produced in 1899 nearly 7,000,000 square yards of woven goods, valued at $796,000. In 1909 there were 15 establishments similarly engaged and their production of woven goods was nearly 10,500,000 square yards, valued at $1,575,000. In 1914 there were 21 establishments producing linen goods and the output of woven goods was 10,799,628 square yards, valued at $1,765,798, while in 1919 the number of establishments decreased to 10 and the output of woven goods increased to 14,342,000 square yards, valued at $3,799,000. In the census year 1921 the output of the 13 establishments constituting the domestic linen industry was 8,945,000 square yards, valued at $3,537,000. A comparison of the value of the production of woven goods with the value of other products of the industry shows that woven goods constituted 18 per cent of the total value of all products in 1899, 25 per cent in 1909 and in 1914, 54 per cent in 1919, and 48 per cent in 1921.

The fluctuations in the number of wage earners and in wages paid in the linen industry for the census years 1899 to 1914 were very slight, notwithstanding the changes in the number of establishments. Wage earners in the industry as a whole averaged 3,566 in number, and total wages averaged $1,240,197 in these census years. In 1919 the number of establishments was 10 as compared with 21 in 1914, and the number of wage earners was 1,890 as compared with 3,567; total wage payments increased from $1,386,117 in 1914 to $1,635,042 in 1919.

The large decrease in the number of establishments and in the number of employees between the census years 1914 and 1919, coincident with an increase in the production of woven goods, is explained by the fact that the establishments which were producing woven goods in 1914 were still operating in 1919, while the establishments which were producing flax twine in 1914 had, owing to the scarcity and high price of flax, turned to other raw materials in 1919 and were not included in the linen industry. In substantiation of this deduction the quantity of flax twine produced may be cited, decreasing from 3,953,622 pounds in 1914 to 84,415 pounds in 1919.

Massachusetts, with three establishments, produced 48½ per cent of the total value of all products in 1921, and is the leading State in the linen industry. There were two establishments each in Minnesota, New Hampshire, New Jersey, and New York, and one each in Pennsylvania and Wisconsin.

The output in 1921 of the 13 establishments was about 50 per cent of the maximum capacity, based upon a demand requiring full-time operation.[2]

No tailors' paddings were produced in the United States prior to 1915, in which year one company began producing them. Three companies were making paddings in 1918, but since 1921 only one company has been manufacturing this product. According to information from independent sources, the three companies produced 8,540,000 linear yards of padding in 1918, 4,200,000 linear yards in 1919, and 4,150,000 linear yards in 1920. The product of the one company manufacturing paddings in 1921 and 1922 consisted largely of jute and cotton paddings, although some all-flax and some flax and jute paddings were made. It should be noted that the production of flax padding is included in the general statistics of production for the linen industry as a whole, page 25.

IMPORTS FOR CONSUMPTION.

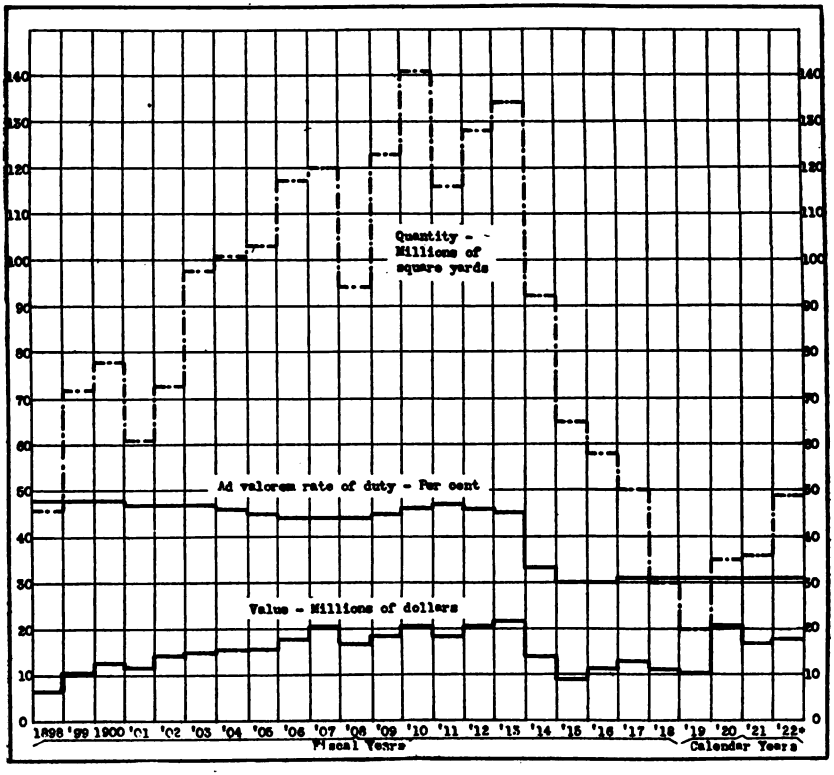
During the periods 1910–1913, inclusive, and 1917–1922, inclusive, imports of woven fabrics of flax, hemp, or ramie were recorded in detail, while in all other years since 1898 some classes of fabrics were not specially provided for and were entered with general manufactures. Thus during the period 1898–1902, inclusive, neither the quantity of fabrics on which the ordinary duty did not amount to 50 per cent, nor the quantity or value of fabrics weighing less than 4½ ounces per square yard and containing not more than 100 threads to the square inch, was separately recorded. During the period 1903–1909, inclusive, fabrics weighing less than 4½ ounces per square

[2] United States census of manufactures, 1921.

yard and containing not more than 100 threads to the square inch were still not shown separately, although the quantity of imports of fabrics on which the ordinary duty did not amount to 50 per cent was shown. During the period October 3, 1913, to June 30, 1916, fabrics other than plain woven were not shown separately in import statistics, although such imports have been separately recorded since June 30, 1916.

The following chart shows the quantity and value of imports as well as the ad valorem equivalent rates of duty during the years 1898–1922, inclusive. It should be kept in mind that, as noted above, during the periods 1898–1909, inclusive, and 1914–1916, inclusive, certain fabrics are not included.

Woven fabrics of flax, hemp, or ramie—Imports for consumption, 1898 to 1921, showing quantity, value, and average ad valorem rate of duty.


Quantity - Millions of square yards
Ad valorem rate of duty - Per cent
Value - Millions of dollars
1898 '99 1900 '01 '02 '03 '04 '05 '06 '07 '08 '09 '10 '11 '12 '13 '14 '15 '16 '17 '18 '19 '20 '21 '22*
Fiscal Years
Calendar Years

* Jan. 1, to Sept. 21, 1922.

Linen goods imported into the United States originate chiefly in the United Kingdom, less than 1 per cent in 1919, about 8 per cent in 1920, and 12 per cent in 1921 having come from all other countries combined. Ireland sends the finer, highly bleached fabrics, while the coarser goods come largely from Scotland.

According to British statistics, approximately 90 per cent of the linen piece goods exported from the United Kingdom to the United States during the period 1906 to 1921, inclusive, was plain goods—

about one-half of which was bleached and one-half unbleached. The remaining 10 per cent was made up of "checked, printed, and dyed" goods, and "damask and diaper" cloth. Plain goods consist of certain household linens, such as sheeting, pillow linen, crash toweling, and similar goods, while "checked, printed, and dyed" refers to such goods as dress linens and glass cloths, and "damask and diaper" consists chiefly of table damask.

Imports for consumption during the fiscal years 1910–1913 averaged 129,944,365 square yards in quantity and $20,227,723 in value; duties averaged $9,279,379. Imports in the fiscal year 1910 amounted to 141,489,520 square yards, valued at $20,828,848, yielding a revenue of $9,587,324, or 46.03 per cent of the value. Although imports held up well until 1913, they were below those of 1910, and after 1913 they steadily declined through the war period, and amounted to only 20,882,537 square yards, valued at $10,591,592 in 1919. In 1920 imports were 35,694,760 square yards, valued at $21,365,194. They increased to 36,594,557 square yards, valued at $17,005,531 in 1921, and during the period January 1 to September 21, 1922, they amounted to 49,262,126 square yards, valued at $17,932,861. Owing to the great increase in prices, imports in 1920, while constituting only 27 per cent of the quantity, actually exceeded by 5.6 per cent the average value of imports during the fiscal years 1910–1913. As indicating the extent to which prices have held to the high level, imports during the period January 1 to September 21, 1922, were 38 per cent in quantity and 89 per cent in value of the average during the fiscal years 1910–1913.

Imports under paragraph 1109 in the act of 1922 will represent very closely the range of fabrics made in domestic mills, and will, therefore provide, for the first time, a basis for a comparison of imports with domestic production.

Paddings are imported in a great variety of qualities, but as no separate record of such imports has been kept, they have been included with other fabrics. Inasmuch as they are specially provided for in the act of 1922, imports have been separately recorded since September, 1922. The bulk of imports consists of all-linen paddings, although all-jute, jute and cotton, and flax and jute paddings are also imported. Imports originate chiefly in Ireland and Scotland, Ireland specializing in all-linen paddings and Scotland in those of jute and cotton. Belgium is also an important source of imports.

The domestic consumption of paddings is estimated at about 50,000,000 linear yards per year.

EXPORTS.

FROM THE UNITED STATES.

Exports of woven fabrics of flax, hemp, or ramie from the United States are not separately stated in export statistics, but are known to be negligible.

FROM THE UNITED KINGDOM.

Prior to 1914 all manufactures of linen exported from the United Kingdom were grouped in British statistics under the classification "linen manufactures, unenumerated." In 1914 separate classifi-

cations were established for "table linen, not in the piece," and "handkerchiefs, not in the piece." Since 1914 tablecloths and napkins have constituted on an average approximately one-half of the value of total exports of all manufactures of linen, with the exception of yarn and thread for sewing, from the United Kingdom to the United States; handkerchiefs have constituted about one-third, and the remainder, or one-sixth, has been made up of miscellaneous manufactures, such as lace and embroidery, rick covers, tarpaulin, tents and awnings, buckets, etc.

The United States is the United Kingdom's best customer for linen piece goods. Thus in only three of the calendar years from 1906 to 1921, inclusive, did the United States fail to take as much as one-half of the United Kingdom's total exports of such goods (38 per cent in 1918, 29.9 per cent in 1919, and 48.3 per cent in 1920). South America is the United Kingdom's next best customer for this class of merchandise.

The United Kingdom has also found its best market for manufactures of linen, such as handkerchiefs, tablecloths, napkins, etc., in the United States. In only four of the calendar years, from 1909 to 1921, inclusive, did the value of such exports destined for the United States fall below 50 per cent of the total (46.7 per cent in 1911, 44.1 per cent in 1912, 42.7 per cent in 1913, and 37.2 per cent in 1919), while in 1921 the value of such exports shipped to the United States was over three-fourths of the total.

In addition to exports from the United Kingdom to foreign countries, considerable quantities of both linen piece goods and manufactures of linen are sent into British possessions. This trade with the colonies in piece goods amounts on an average to approximately one-quarter of the trade with foreign countries, except for sailcloth, in which it slightly exceeds that with foreign countries. The trade in manufactures of linen (handkerchiefs, tablecloths, napkins, etc.) is divided fairly evenly between British possessions and foreign countries.

DOMESTIC CONSUMPTION.

Considered from the standpoint of total domestic consumption (domestic production plus imports) of all kinds of linen fabrics, about 90 per cent of the domestic demand was met by imports in the census years 1899, 1909, and 1914. In 1919 domestic production was one and one-third times in quantity and almost two and one-fourth times in value the production in 1914. In the meantime imports had dropped by almost 75 per cent. Thus imports supplied but 46.6 per cent of domestic consumption in 1919 as compared with 90 per cent during the pre-war period. Comparing 1921 with 1919, however, domestic production decreased by about one-third, or to about 50 per cent of the maximum capacity of domestic mills, while imports more than doubled. This means that about 75 per cent of the domestic consumption in 1921 was supplied by imports. The products of the linen industry are not numbered among the necessities of life, therefore economic factors, such as the price relationship to products which are available as substitutes, determine the consumption by the users thereof.

PRICES.

The net wholesale selling price, on the American market, of eight different grades of Scotch linen crash averaged 17.4 cents per linear yard in September, 1921, as compared with 17.8 cents per linear yard for 12 different grades of domestic crash in May of the same year. The Scotch crash averaged 17.7 inches in width, 51 threads per square inch, and 7.7 ounces per square yard, while the domestic crash averaged 17.9 inches in width, 49 threads per square inch, and 4.7 ounces per square yard. The net invoice price of the Scotch crash increased from 5.7 cents to 18.1 cents per linear yard between March, 1914, and May, 1920. The net wholesale selling price of the domestic crash increased to about the same extent, or somewhat more than 200 per cent. In the latter months of 1922 prices of both the Scotch and the domestic crash were about 100 per cent above the 1914 prices.

The difference between the invoice price and the wholesale selling price of the Scotch crash averaged approximately 6.3 cents per linear yard in the latter part of 1921; this is a spread of somewhat more than 50 per cent. After paying the duty (30 per cent ad valorem) about 20 per cent remained to cover landing charges, overhead, and profit.

Prices of other woven fabrics of flax, hemp, or ramie included in this section increased between 1914 and the peak price of 1920, from 200 to 400 per cent, while in 1922 they decreased to a point from about 100 to 200 per cent above 1914 prices.

WAGES.

Data concerning wages in the foreign linen industry are meager, but the wage scale in the domestic industry, although the product does not include the higher grade goods, is decidedly higher. This condition is not peculiar to the linen industry. The difference is greater in the linen industry, however, because lower wages are paid in that industry than in any other textile industry of the United Kingdom. The American linen mills do not differ materially with respect to their wage scales from other domestic textile industries.

It should be noted also that as the products of the linen industry increase in fineness of weave and completeness of bleach the ratio of labor cost to total cost tends to increase proportionately. Thus, should the domestic industry attempt the production of light-weight, highly bleached linens the element of labor cost would be a deterring factor.

It is possible, of course, for the difference in efficiency of operation to offset, in a measure, the differences in costs of production between domestic and foreign mills.

METHODS OF PRODUCTION.

Yarn spinning.—With the exception of 15 per cent, the yarn requirements of the domestic linen industry are supplied by domestic producers. The yarn is spun from imported fiber, there being but small quantities of fiber produced in the United States, and such as

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is produced is not popular with spinners. Some domestic mills spin their yarn while a few weave only, buying the yarn largely in foreign markets. There are no domestic mills which confine their operations to spinning for sale; the mills use most of the yarn spun in further manufacture, either in weaving or in making thread, twine, and cord; consequently very little yarn of domestic manufacture is available for the weaving mills which do not have their own spinning department. One domestic mill has 1,000 spindles but has never spun yarn; the spindles merely guard against conditions under which yarn from regular sources of supply might not be available.

Weaving.—The operations involved in weaving linen goods do not differ widely from those employed in weaving cotton goods, and the looms used are practically all made in this country. Both plain and automatic looms are used, the former predominating.

Bleaching and finishing.—The bleaching and finishing of linen fabrics are processes exceedingly difficult, as compared with similar operations for cotton fabrics, owing to the greater amount of extraneous matter in the linen fiber. Domestic bleaching of linen goods is not carried through to the same degree of perfection as that practiced abroad for fine linens. Domestic crashes are generally boiled and bleached in the piece. They are first boiled in a strong alkaline solution and then, after washing, are steeped in a weak solution of hydrochloric acid, which neutralizes the alkali. They are then washed and dried by passing over heated cylinders. Bleaching of fine linens, as carried on in Ireland, requires from six to eight weeks of washing, boiling, and spreading the fabric on the grass. Grass bleaching accounts for the whiteness and softness of Irish linens. In addition to skilled workers, who are unexcelled, Ireland enjoys certain climatic conditions which are decidedly advantageous to the production of fine linen. For instance, grass bleaching could not be accomplished in the United States, because long periods of uniformly temperate and moist atmospheric conditions must prevail. Linens from the Continent are sent to Ulster for bleaching, dyeing, and finishing. Only a small part of the world's consumption of linen is grass-bleached; the bulk is bleached entirely by chemicals.

A large proportion of flax yarn is boiled or bleached before going to the loom. Boiling removes dirt and impurities and makes a tighter and firmer cloth. Yarns intended for use in the manufacture of fine, white linens, pillow linen, sheeting, and damask are usually boiled. As a rule yarns that are bleached are those intended for glass cloth, damask, huckaback, and towels, which are not bleached after weaving. Some fabrics, however, are bleached both in the yarn and in the piece.

Mill construction.—Since most of the machinery used in the manufacture of linen goods is very heavy, linen mills must be strongly built. This, together with the high price of machinery used in a linen mill as compared with that used in a cotton mill, means that a linen mill costs several times as much per spindle as a cotton mill

COMPETITIVE CONDITIONS.

The domestic linen industry has not developed beyond the production of a few medium-grade fabrics, but is fairly well established. There are certain natural obstacles as well as inherent difficulties operating against its development.

The domestic production of flax fiber is small and it is pronounced by spinners as unsatisfactory for their use. Therefore, imported fiber is used by domestic spinners in the production of yarns for use in weaving.

There are no domestic mills which confine their operations to spinning yarn. The bulk of yarn spun in domestic mills is consumed in the same mills in further manufacture. Consequently domestic weaving mills which have no spinning department, or which can not spin sufficient yarn for their requirements, must depend largely upon foreign sources for all or part of their yarn. The duty on imported yarn ranges from 25 per cent ad valorem to 35 per cent ad valorem, according to the count or size.

Except for the looms, machinery for the equipment of a linen mill must be imported, as it is not made in the United States, and must pay, in addition to a price, which is very high compared to similar machinery for a cotton mill, a duty of 35 per cent ad valorem.

Bleaching and finishing cotton goods, as well as the domestic output of linen goods, require only a few hours, or days at the outside, while a part of the high-grade linens produced in Ireland attain their whiteness and softness by elaborate processes requiring from six to eight weeks of treatment.

The domestic output of linen fabrics, being of medium grade, does not require the highly skilled operatives necessary in the manufacture of the finely-woven, light-weight goods, although the operations are somewhat more difficult than those employed in the manufacture of similar cotton goods.

These natural difficulties attending the production of other than medium grade linen fabrics operate to restrict the development of the domestic linen industry, but the range of goods falling in the medium grade class includes some fabrics which are not, but obviously could be, made in domestic mills. Dress and suiting linen, embroidery linen, and table damask, for instance, could be made by domestic manufacturers, with the use of broader looms than those now employed.

Imports, while made up largely of noncompetitive goods, also include goods which compete with the domestic product. The domestic product has, however, shown a substantial increase in quantity, having been, in 1919, over twice the output of 1899, although in 1921 it was only about one-third greater than in 1899.

While the domestic linen industry encounters competition from imports, there is another and quite important element. It is competition with cotton goods, and affects imports as well as domestic production. Cotton goods, being cheaper, compete with linens by "displacement." This "displacement," or substitution of cotton goods for linens, occurs when the difference in price reaches the point where the use of cotton becomes more economical. In the case of toweling crash this "displacement" form of competition is not as pronounced as it is in the case of the higher grade fabrics, because the cost of production of linens increases with the fineness of weave and completeness of bleach much more rapidly than in the case of cotton goods. If linen table damask were available at the same price as cotton table damask it is extremely doubtful if any cotton damask would be used. On the other hand, there are certain users of fine linen goods in the United States who will continue to use linen irrespective of the price differential in favor of a cotton substitute.

The price relationship in January, 1923, of linen and cotton goods which might be put to the same uses was as follows:[1]

	Lawn, 36 inches wide, per yard.	Toweling, 17 inches wide, per yard.	Damask tablecloths, 69 by 69 inches, per cloth.	Damask napkins, 20 by 20 inches, per dozen.
Linen	$1.50	$0.30	$3.80	$5.00
Cotton	.35	.15	1.90	2.75
Ratio of linen price to cotton price (per cent)	428	200	200	182

SECTION II.

PILE FABRICS OF VEGETABLE FIBER OTHER THAN COTTON, AND MANUFACTURES THEREOF.

TARIFF ACT OF 1922.

Paragraph 1012. Pile fabrics, composed wholly or in chief value of vegetable fiber other than cotton, cut or uncut, whether or not the pile covers the whole surface, and manufactures in any form, made or cut from any of the foregoing, 45 per centum ad valorem.

GENERAL INFORMATION.

DESCRIPTION AND USES.

A pile fabric is one consisting of a foundation cloth covered entirely or partly by short projecting ends or loops formed by an extra set of threads. In a flax pile fabric the ground threads are usually of cotton and the pile is formed from flax threads. The cotton ground gives greater flexibility. Pile fabrics made of vegetable fiber other than cotton are lacking somewhat in resiliency; the pile does not revert so rapidly to an upright position after having been pressed down. For this reason flax, hemp, and ramie are not generally used in the manufacture of pile fabrics, such fabrics of these materials are used principally for furniture coverings and are a specialty production, showing cut or uncut pile figures on a loose (nonpile) ground. All-over pile fabrics made from vegetable fiber other than cotton are used principally for portières and hangings.

The commonest pile fabric is turkish towels, of which imports are small. Most are imported on special order and are dutiable under paragraph 1114.

TARIFF HISTORY.

Pile fabrics of flax were separately provided for the first time in the tariff act of 1913. Prior to that act such fabrics, as well as manufactures of pile fabrics, had fallen under the general provisions for manufactures. Pile fabrics of hemp or ramie, as well as manufactures thereof, were dutiable under general provisions for manufactures until 1913 when hemp and ramie were mentioned along with flax as component materials. The act of 1922 provides for pile fabrics and manufactures made therefrom, composed wholly or in chief value of vegetable fiber other than cotton, at 45 per cent ad

[1] Prices quoted by a large department store in Washington.

valorem. Under the act of 1913 the rate was 40 per cent ad valorem on flax, hemp, or ramie fabrics and manufactures, while the act of 1909 imposed a rate of 60 per cent ad valorem on fabrics and manufactures of flax and 45 per cent ad valorem on fabrics and manufactures of hemp or ramie.

DOMESTIC PRODUCTION.

There are no separate records of domestic production of pile fabrics, but it is negligible.

IMPORTS.

Prior to the war the value of imports of pile fabrics of flax, hemp, or ramie ranged around $200,000 per year, attaining a peak of $235,628 in 1913. Imports declined rapidly during the war period, being valued at only $3,603 in 1918. Since 1918 imports have increased gradually, but in 1922 they were less than half of pre-war imports.

Beginning in 1919 imports were recorded by quantity. The value per square yard increased from 46 cents in 1919 to $1.82 in 1921 and then declined to $1.27 in 1922.

Imports originate mainly in France and Germany.

Imports of manufactures of pile fabrics were first separately stated in 1910. Since that time they have been less than $5,000 in value in each year except 1921 and 1922, when the value was $29,390 and $7,475, respectively.

EXPORTS.

There are no exports of pile fabrics of flax, hemp, or ramie, or of manufactures of such fabrics.

SECTION III.

TABLE DAMASK OF VEGETABLE FIBER OTHER THAN COTTON, AND MANUFACTURES THEREOF.

TARIFF ACT OF 1922.

Paragraph 1013. Table damask composed wholly or in chief value of vegetable fiber other than cotton, and manufactures composed wholly or in chief value of such damask, 40 per centum ad valorem.

GENERAL INFORMATION.

DESCRIPTION AND USES.

Damask is a woven figured fabric distinguished by the appearance of the design on the smooth surface without any contrast in colors. The surface threads in the figures lie at right angles to those in the ground, with the result that the light falling on the smooth surface is refracted as it strikes the figures and the pattern stands out in relief.

Damask made from vegetable fiber other than cotton is practically limited to linen damask. It ranges in width from 60 to 90 inches, in weight from 4 to 6 ounces per square yard, and in threads from 96 to 350 to the square inch.

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These goods, as the designation indicates, are used as dining-room table covers, napkins, tray cloths, etc.

A large amount of linen damask is imported in the piece and made up in domestic mills, although considerable quantities of cloths or napkins are also imported.

TARIFF HISTORY.

Table damask and manufactures made therefrom were specifically mentioned for the first time in the act of 1922. In previous acts the fabric in the piece was dutiable on the weight and thread-count standards, when such standards were prescribed, and manufactures made from this fabric, such as tablecloths and napkins, were dutiable under the general provisions for manufactures.

DOMESTIC PRODUCTION.

A small quantity of linen and of union damask is produced in domestic mills. The exact amount is not known.

IMPORTS.

Imports of table damask of vegetable fiber other than cotton have not been separately stated and neither the quantity nor the value is known. Practically all of such imports are of linen damask, largely from the United Kingdom. Belgium and Germany send some of these goods to the United States, as does France. A large part of those from France are embroidered.

EXPORTS.

There are no exports of table damask of vegetable fiber other than cotton.

COURT AND TREASURY DECISIONS.

Paragraph 346 of the act of 1897 was held not to be restricted to woven fabrics in the piece, and finished articles of flax such as linen doilies and tray cloths were held to fall within the scope of that provision. (McBratney *v.* United States, 105 Fed. 767, certiorari denied, 181 U. S. 621.) The words "foregoing articles" in the proviso of that paragraph were held to include woven fabrics as well as finished articles. (Schulman *v.* United States, 123 Fed. 1002.) So-called Roman canvas composed of flax and coated on one side with paint was held to be dutiable under the provision for woven fabrics in paragraph 346 rather than at a lower rate of duty as manufactures of flax and paint. (G. A. 4465; T. D. 21325.) Flax articles and fabrics weighing less than 4½ ounces per square yard and containing less than 100 threads per square inch were held not to be provided for in paragraph 346 and therefore to be relegated to the basket clause, paragraph 347. (G. A. 5238; T. D. 24084.)

The provision in paragraph 342 of the act of 1897 for "all pile fabrics of which flax is the component material of chief value" was held to be more specific as regards plush composed in chief value of

flax than the provision in paragraph 315 of that act for plush composed of cotton or other vegetable fiber. (Stern *v.* United States, 99 Fed. 417; Ryer *v.* United States, 126 Fed. 246.)

Card cloth in chief value of flax, known in the textile industry as a "plain double weave," woven double by an intricate and elaborate method for the purpose of increasing its weight and strength, but presenting by its weave a plain as distinguished from a figured or twilled effect, was held to be dutiable under the provisions of paragraph 283 of the act of 1913 as "plain woven fabrics" and not as "manufactures of flax" under paragraph 284. The test of whether or not a fabric is "plain woven" under paragraph 283 was held to be the appearance its weave presents and not the manner of its weaving. (Stone *v.* United States, 7 Ct. Cust. Appls. 365, of 1916.) Flax fabrics, with triple warp and double weft, not figured in any manner, having a perfectly plain appearance and the weave uniform throughout, were held to be plain woven and dutiable under paragraph 283. (Abstract 38771 of 1915, following 99 Fed. 262 of 1900; White *v.* United States, 2 Ct. Cust. Appls. 327 of 1911; and United States *v.* White, 3 Ct. Cust. Appls. 382 of 1912). Flax canvas with a double warp and a single weft, having a perfectly plain appearance and the weave uniform throughout, was likewise classified. (Abstract 39693, of 1916.)

Chain-bordered crash or crash toweling, so woven as to produce a distinctly discernible border the whole length of the piece, whether the border is in color or in plain white, although each weave if alone employed would result in a plain woven fabric, is figured and not plain woven, and was held to be dutiable as a manufacture of flax under paragraph 284 of the act of 1913. (United States *v.* White, 3 Ct. Cust. Appls. 382, of 1912; United States *v.* Douglas, 6 Ct. Cust. Appls. 100, of 1915, followed in Abstract 37996 of 1915, Abstract 39051 of 1916, and Abstracts 45645 and 45835 of 1923.) Bordered flax crash, however, where the weave is plain and the same in the border as in the body of the fabric, even though the border is colored, was held to be plain woven within paragraph 283 and dutiable thereunder. (Abstracts 37996 and 38772 of 1915.)

Huck toweling woven in such a manner that the weft threads appear at regular intervals in groups on the surface of the fabric, making a dotted or figured effect, is not a plain-woven fabric. (Abstract 35653, T. D. 34468 of 1914; followed in Abstract 37000, T. D. 34984 of 1914.) Neither is linen damask plain woven. (White *v.* United States, 2 Ct. Cust. Appls. 327 of 1911.)

Plain-woven flax fabrics under 12 inches in width were held to be dutiable at 30 per cent under paragraph 283 of the act of 1913 rather than at 25 per cent as fabrics with fast edges not exceeding 12 inches in width made of vegetable fiber under paragraph 262. (Abstract 37256 of 1915, followed in Abstract 38774 of 1915.)

Flax pillow tubing in 20 or 30 yard lengths was held to be a fabric rather than an article. (Abstract 34361 of 1913.) Flax scarfing with a hem and hemstitching was also held not to be an article, finished or unfinished, but to be advanced beyond the condition of a plain-woven fabric and dutiable as a manufacture of flax. (Lamb *v.* United States, 6 Ct. Cust. Appls. 115 of 1915.)

Towels of cotton and flax with a loop pile similar to terry cloth were held dutiable as pile fabrics in chief value of flax under paragraph 280 of the act of 1913 rather than as manufactures of flax under paragraph 284. (Abstract 44447 of 1921.)

A plain-woven fabric having a cotton warp and jute filling, jute being the component material of chief value, was held not to be within the provision for "plain-woven fabrics of jute yarn" in paragraph 408 of the free list but to be dutiable as a manufacture of vegetable fiber under paragraph 284. (G. A. 8124, T. D. 37492.)

Among the articles held dutiable under paragraph 284 of the act of 1913 are the following: Union towels in chief value of flax (Abstract 38815 of 1915); "hemp allover," a woven fabric of manila hemp, not plain woven (Abstract 41931 of 1918); chain-bordered crash or crash toweling, not plain woven (United States *v.* White, 3 Ct. Cust. Appls. 382 of 1912; United States *v.* Douglas, 6 Ct. Cust. Appls. 100 of 1915, followed in Abstract 37996 of 1915, Abstract 39051 of 1916, and Abstracts 45645 and 45835 of 1923); huck toweling, not plain woven (Abstract 35653, T. D. 34468 of 1914; Abstract 37000, T. D. 34984 of 1914); flax card cloth, twilled (Abstract 37354 of 1915, followed in Abstract 38037 of 1915); linen damask (White *v.* United States, 2 Ct. Cust. Appls. 327 of 1911); linen towels, having a zigzag pattern, woven at each end, with open-work effect (Abstract 38282 of 1915); hemstitched flax towels, with an additional row of spoke stitching or open work simulating hemstitching about 4 inches from the hem and commercially known as hemstitching (G. A. 8056, T. D. 37142 of 1917); unfinished flax articles consisting of woven pieces of linen with a staff design for embroidering with a very small part of the outline design filled in with embroidery thread (Abstracts 42153 of 1918, and 43017 of 1919); and tennis nets made from Russian hemp (G. A. 7745, T. D. 35562 of 1915).

STATISTICAL TABLES.

TABLE 1.—*Construction of domestic and foreign crashes, huck, embroidery linens, and glass cloths.*

CRASH.

No.	Width.	Weight per square yard, finished.	Threads per inch, finished.		Yarn number as spun.[1]		Material.		Country of origin.
			Warp.	Filling.	Warp.	Filling.	Warp.	Filling.	
	Inches.	*Ounces.*	*Number.*	*Number.*	*Lea.*	*Lea.*			
1	18	7.4	25	24	16.9	10.0	Flax	Flax	Domestic.
2	17½	7.3	29	26	14.2	14.4	...do	...do	Scotland.
3	16	5.4	24	23	17.0	16.9	...do	...do	Do.
4	18	7.7	26	20	16.0	7.4	...do	...do	Domestic.
5	17½	6.1	26	22	14.0	15.7	...do	...do	Scotland.
6	.....	7.7	32	28	18.3	12.6	...do	...do	Domestic.
7	20½	7.9	34	21	12.0	12.6	...do	...do	Scotland.
8	18	6.5	32	25	18.0	16.4	...do	...do	Domestic.
9	18	6.7	21	18	7.8	9.5	...do	...do	Do.
10	17	6.5	37	37	21.4	20.1	...do	...do	Ireland.
11	16½	6.7	28	26	18.9	14.9	...do	...do	Do.
12	16½	6.0	25	27	17.4	10.2	...do	...do	Scotland.
13	18	7.5	31	18	[2] 6.2	7.2	Cotton	...do	Domestic.
14	16	3.6	33	26	[2] 16.8	21.7	...do	...do	Ireland.
15	18	7.1	30	27	15.6	19.5	Cotton Flax [3]	Cotton Flax [3]	Domestic.
16	16	9.5	21	23	[2] 2.4	7.9	Cotton	Cotton Flax [3]	Domestic.

HUCK.

17	20	6.3	59	33	[2] 10.1	26.9	Cotton	Flax	Domestic.
18	17	6.3	60	40	[2] 15.5	32.9	...do	...do	Ireland.

BROWN EMBROIDERY LINEN.

19	18	6.1	32	39	20.8	21.8	Flax	Flax	Ireland.
20	18	6.4	41	43	25.6	29.9	...do	...do	Do.

GLASS CLOTHS.

21	17	6.5	27	29	16.6	16.9	Flax	Flax	Domestic.
22	17	4.8	39	44	29.7	38.9	...do	...do	Ireland.
23	17	5.2	60	24	[2] 14.4	17.2	Cotton	...do	Domestic.
24	16	3.4	60	38	[2] 22.9	17.5	...do	...do	Ireland.

[1] The number of leas, or 300-yard lengths, which weigh 1 pound.
[2] Fiber content of yarn. These fabrics are woven from yarns which are spun from a mixture of flax and cotton fiber.
[3] The number of hanks of 840 yards each, in 1 pound.

TABLE 2.—*Construction of foreign and domestic paddings.*

Weight per square yard, finished.	Threads per inch, finished.		Yarn number.[1]		Material.		Country of origin.
	Warp.	Filling.	Warp.	Filling.	Warp.	Filling.	
Ounces.	*Number.*	*Number.*	*Lea.*	*Lea.*			
4.9	32	30	32.7	19.2	Flax	Flax	Ireland.
5.0	32	37	29.4	23.5	....do	....do	Do.
5.5	49	48	31.9	33.9	....do	....do	Belgium.
5.6	32	26	24.1	18.5	....do	....do	Ireland.
5.9	38	34	24.4	22.7	....do	....do	Do.
6.3	45	44	28.2	28.4	....do	....do	Do.
6.6	48	42	29.2	27.2	....do	....do	Do.
6.7	57	40	23.6	35.2	....do	....do	Do.
6.9	57	40	23.2	34.6	....do	....do	Do.
7.0	51	37	24.3	27.7	....do	....do	Do.
7.6	37	41	20.7	21.9	....do	....do	Do.
9.0	31	36	15.9	[2] 3.6	....do	Jute	Scotland.
9.8	31	34	17.3	[2] 4.4	....do	....do	Do.
7.3	19	22	[2] 9.4	[2] 4.1	Jute	....do	Belgium.
7.9	20	21	[2] 9.4	[2] 4.6	....do	....do	Scotland.
10.1	22	27	[2] 9.6	[2] 4.7	....do	....do	Belgium.
5.6	31	27	[3] 10.8	[2] 3.6	Cotton	....do	Do.
6.0	26	32	[3] 4 16	[2] [3] 3.5	....do	....do	Domestic.
6.6	31	29	[3] 18.5	[2] 3.9	....do	....do	Scotland.
7.0	36	34	[3] 4 16	[2] [3] 3.5	....do	....do	Domestic.
7.1	31	36	[3] 12.5	[2] 4.3	....do	....do	Belgium.
9.0	38	38	[3] 4 16	[2] [3] 4.5	....do	....do	Domestic.
9.5	35	45	[3] 17.0	[2] 3.6	....do	....do	Belgium.

[1] The number of leas, or 300-yard lengths, which weigh 1 pound.
[2] The weight of one spindle, or 14,400 yards in pounds.
[3] The number of hanks of 840 yards each in 1 pound.
[4] Number of yarn as actually spun; in other cases the yarn number was obtained from the yarn with the sizing material and consequently appears heavier than the yarn number as spun.

TABLE 3.—*Construction[1] of representative linens.*

No. of sample.	Manufacturer's description.	Weight in ounces per square yard.	Threads per square inch.	Width in inches.	Country of origin.
1	Bleached sheer linen cambric	1.60	132	36	Ireland.
2	Linen cambric	2.25	111	36	Do.
3	....do	2.33	190	36	Do.
4	Bleached linen cambric	2.40	138	36	Do.
5	White linen	2.40	135	36	Do.
6	....do	2.75	150	36	Do.
7	Green yarn bleached linen	3.00	132	36	Do.
8	White linen	3.00	105	36	Do.
9	Blouse linen, union	3.12	98	30	Do.
10	Blouse linen	3.25	111	36	Do.
11	Linen sheetings	4.00	106	90	Do.
12	Union sheetings	4.00	103	90	Do.
13	Linen, colored	4.00	95	45	Do.
14	White art linen	4.38	130	45	Do.
15	Blouse linen	4.38	90	35	Do.
16	Huck toweling	4.75	120	18	United States.
17	Bleached linen huck	5.25	126	15	Ireland.
18	Plain huck toweling	5.60	119	18	United States.
19	Colored dress linen	5.75	70	36	Ireland.
20	....do	5.87	52	36	Do.
21	Bleached linen	6.70	81	45	United States.
22	Linen huck crash	6.16	82	17	Ireland.
23	Huck crash, union	6.87	60	17	Do.
24	Plain huck toweling	7.10	102	18	United States.
25	Brown linen	7.40	68	36	Do.
26	Bleached linen suiting	7.50	77	36	Ireland.

[1] Foreign manufacturers' and wholesale domestic prices of some of these linens in 1914, 1921, and 1922 are given on p. 25.

TABLE 4.—*Prices of foreign and domestic unbleached linen crash.*

MANUFACTURED IN SCOTLAND.

No.	Width.	Weight per square yard.	Threads per square inch.	Net invoice price per linear yard.				Domestic wholesale selling price per linear yard, September, 1921.
				March, 1914.	May, 1920.	July, 1921.	August, 1922.	
	Inches.	*Ounces.*		*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
1	15½	7.62	51	5.01	15.56	9.50	9.9	15.55
2	16½	7.62	51	4.56	16.14	10.31	10.1	16.17
3	17½	7.62	51	5.38	18.91	10.85	11.0	16.90
4	19	7.62	51	6.57	18.26	11.40	11.9	17.76
5	17½	7.75	57	6.11	19.02	11.57	13.1	18.13
6	20½	7.62	51	6.36	19.98	12.48	13.5	19.47
7	20½	8.37	59	7.58	23.83	14.83	16.2	23.18
8	14½	7.12	40	4.24	12.87	7.60	.....	12.12

MANUFACTURED IN UNITED STATES.

No.	Width.	Weight per square yard.	Threads per square inch.	Net wholesale selling price per linear yard.					
				January, 1900.	February, 1907.	April, 1912.	March, 1920.	May, 1921.	December, 1922.
	Inches.	*Ounces.*		*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
1	15	3.55	37	4.5	4.7	5.3	18.5	10.6	10.0
2	16	3.95	37	5.2	5.6	6.2	20.2	11.4	10.7
3	18	.....	33	5.2	5.6	6.2	.....	.....	.....
4	18	4.53	38	5.6	6.3	6.6	22.9	13.9	13.1
5	15	3.89	45	.....	6.8	6.8	22.9	13.9	13.1
6	16	4.27	48	5.9	7.2	7.3	27.3	15.5	14.6
7	18	4.86	48	6.3	7.7	7.7	29.9	17.2	16.2
8	20	5.30	47	7.0	8.4	8.4	31.7	18.8	17.7
9	18	4.77	54	7.5	9.0	9.0	33.4	20.4	19.2
10	21	5.73	48	7.5	9.0	9.0	34.3	21.2	20.0
11	18	4.83	60	9.0	10.4	10.3	35.2	22.1	20.8
12	21	5.76	60	9.9	11.1	10.8	39.6	25.3	23.8
13	19	5.44	64	9.9	11.1	10.8	37.0	23.7	22.3

TABLE 5.—*Net invoice prices of bleached linen damask hemstitched tablecloths manufactured in Scotland.*

No.	Threads per square inch.	Weight per square yard.	Size.	Price per cloth.			
				July, 1914.	September, 1920.	August, 1921.	Oct. 2, 1922.
		Ounces.	*Inches.*				
1	124	4.75	66 by 66	$1.017	$4.799	$2.351	$2.135
			66 by 84	1.291	6.013	2.997	2.663
			66 by 101	1.565	7.226	3.628	3.175
2	114	5.12	66 by 66	.998	4.827	2.439	2.222
			66 by 84	1.262	6.069	3.085	2.787
			66 by 101	1.527	7.283	3.717	3.351
3	118	5.25	66 by 66	1.076	5.138	2.615	2.293
			66 by 84	1.350	6.436	3.305	2.893
			66 by 101	1.624	.....	4.011	3.439
4	142	5.75	66 by 66	1.213	5.589	2.792	2.610
			66 by 84	1.506	7.000	3.541	3.298
			66 by 101	1.800	8.384	4.275	3.951
5	148	5.50	68 by 68	1.311	5.843	2.924	2.698
			68 by 86	1.643	7.311	3.658	3.405
			68 by 104	1.957	8.779	4.393	4.110
			86 by 86	2.172	9.555	4.789	.....

TABLE 5.—*Net invoice prices of bleached linen damask hemstitched tablecloths manufactured in Scotland*—Continued.

No.	Threads per square inch.	Weight per square yard.	Size.	Price per cloth.			
				July, 1914.	September, 1920.	August, 1921.	Oct. 2, 1922.
		Ounces.	*Inches.*				
6	171	5.75	68 by 68	$1.565	$6.803	$3.673	.....
			68 by 86	1.957	8.468	4.584	.....
			68 by 104	2.348	10.133	5.509	.....
			86 by 86	2.524	11.207	6.038	.....
7	179	6.33	68 by 68	1.683	7.452	3.687	$3.492
			68 by 86	2.094	9.287	4.598	4.427
			68 by 104	2.524	11.179	5.524	5.362
			86 by 86	2.740	11.997	6.038	.....
8	207	6.00	68 by 68	2.035	8.581	4.598	.....
			68 by 86	2.544	10.727	5.745	.....
			68 by 104	3.052	12.872	6.890	.....
			86 by 86	3.189	13.916	7.537	.....
9	244	6.00	68 by 68	2.368	10.614	5.686	.....
			68 by 86	3.209	13.211	7.096	.....
			68 by 104	3.855	15.836	8.506	.....

TABLE 6.—*Net invoice prices of bleached linen damask plain tablecloths manufactured in Scotland.*

No.	Threads per square inch.	Weight per square yard.	Size.	Price per cloth.[1]			
				July, 1914.	September, 1920.	August, 1921.	Oct. 2, 1922.
		Ounces.	*Inches.*				
1	111	5.37	66 by 66	$0.724	$3.698	$1.940	$1.764
			66 by 84	.910	4.658	2.483	2.275
			66 by 100	1.096	5.589	2.924	2.663
2	124	4.75	66 by 66	.773	3.938	2.027	1.888
			66 by 84	.969	4.982	2.571	2.399
			66 by 100	1.194	5.970	3.056	2.840
3	143	4.75	66 by 66	.880	4.305	2.424	2.222
			66 by 84	1.125	5.419	3,056	2.804
			66 by 100	1.350	6.506	3.658	3.356
			71 by 70	.959	4.925	2.776	.....
			71 by 88	1.213	6.154	3.453	.....
4	111	4.88	66 by 66	.....	3.811	2.056	1.884
			66 by 84	.....	4.827	2.601	2.329
			66 by 100	.....	5.790	3.100	2.787
5	118	6.50	68 by 68	.822	4.107	2.233	2.028
			68 by 86	1.037	5.180	2.821	2.576
			68 by 102	1.243	6.196	3.394	3.069
			70 by 70	.841	4.361	2.365	.....
			70 by 88	1.066	5.476	2.967	.....
6	150	6.00	71 by 72	1.135	5.419	2.909	2.698
			71 by 90	1.409	6.774	3.628	3.351
			71 by 108	1.702	8.129	4.364	4.021
7	171	5.75	72 by 72	1.390	6.605	3.496	3.475
			72 by 90	1.722	8.257	4.378	4.339
			72 by 108	2.074	9.908	5.259	5.196
			90 by 90	2.250	10.628	6.871	.....
			90 by 108	2.700	12.745	7.081	.....
8	200	6.33	72 by 72	1.546	7.790	4.128	4.074
			72 by 90	2.035	9.739	5.157	5.080
			72 by 108	2.446	11.686	6.200	6.103
			81 by 81	2.192	10.501	5.480	5.609
			90 by 90	2.681	12.702	6.699	6.703
9	220	5.37	72 by 72	.....	9.146	4.907	4.586
			72 by 90	.....	11.432	6.126	5.715
			72 by 108	.....	13.718	7.346	6.844
			81 by 81	.....	11.856	6.699	6.337
			90 by 90	.....	14.566	7.801	7.513
10	266	5.88	72 by 72	2.661	.....	6.097	6.068
			72 by 90	3.326	.....	7.624	7.584
			72 by 108	3.992	.....	9.138	9.101
			81 by 81	3.483	.....	8.506	8.308
			90 by 90	4.207	.....	10.166	9.948

[1] Rate of exchange used in converting from sterling: July, 1914, at par; September, 1920, 72.13 per cent of par; August, 1921, 75.08 per cent of par; Oct. 2, 1922, 90.14 per cent of par.

TABLE 7.—*Net invoice prices of bleached linen damask hemstitched napkins manufactured in Scotland.*

No.	Threads per square inch.	Weight per square yard.	Size.	Price per dozen.[1]			
				July, 1914.	September, 1920.	August, 1921.	Oct. 2, 1922.
		Ounces.	*Inches.*				
1	124	4.75	19½ by 19½	$1.350	$5.674	$2.880	$2.576
2	114	5.12	20 by 20	1.428	6.295	3.262	3.016
3	118	5.25	20 by 20	.....	6.690	3.394	3.051
4	142	5.75	21 by 21	1.742	7.790	4.055	3.827
5	148	5.50	21 by 21	1.839	8.384	4.187	3.880
6	171	5.75	21 by 21	2.152	9.132	5.068	.....
7	179	6.33	22 by 22	2.641	11.686	5.965	5.679
8	207	6.00	22 by 22	3.307	13.465	7.096	.....
9	244	6.00	23 by 23	4.343	18.235	9.608	8.890

[1] Rate of exchange used in converting from sterling: July, 1914, at par; September, 1920, 72.13 per cent of par; August, 1921, 75.08 per cent of par; Oct. 2, 1922, 90.14 per cent of par.

TABLE 8.—*Net invoice prices of bleached linen damask plain napkins manufactured in Scotland.*

No.	Threads per square inch.	Weight per square yard.	Size.	Price per dozen.[1]			
				July, 1914.	September, 1920.	August, 1921.	Oct. 2, 1922.
		Ounces.	*Inches.*				
1	104	5.00	17 by 17	$0.557	$2.851	$1.499	$1.306
			17½ by 17½	.577	3.020	1.601	1.517
			18 by 18	.607	3.189	1.690	1.570
			19 by 19	.676	3.557	1.865	1.711
			20 by 20	.744	3.868	2.042	1.905
			21 by 21	.822	4.262	2.263	2.099
			22 by 22	.900	4.686	2.483	2.293
2	105	4.50	16½ by 16½	.509	2.597	1.395	1.340
			17 by 17	.....	2.752	1.499	1.447
			17½ by 17½	.567	2.908	1.601	1.500
			18 by 18	.607	3.048	1.631	1.570
			19 by 19	.665	3.387	1.822	1.694
			20 by 20	.733	3.755	2.013	1.869
			20½ by 20½	.763	3.981	2.160	.....
3	111	5.16	17 by 17	.....	3.076	1.675	.....
			18 by 18	.....	3.444	1.851	1.641
			19 by 19	.714	3.839	2.072	1.764
			20 by 20	.792	4.262	2.292	1.922
			21 by 21	.870	4.686	2.512	2.135
			22 by 22	.959	5.166	2.747	2.346
			23 by 23	1.047	.....	3.026	.....
4	113	4.63	16½ by 16½	538	2.682	1.484	1.411
			17 by 17	.567	2.908	1.586	1.500
			17½ by 17½	.607	3.091	1.675	1.570
			18 by 18	.626	3.228	1.778	1.658
			19 by 19	.704	3.641	1.983	1.852
			20 by 20	.773	4.022	2.189	2.063
			21 by 21	.841	4.403	2.233	2.222
5	121	4.62	17 by 17	.596	3.076	1.704	1.587
			18 by 18	.665	3.444	1.924	1.799
			19 by 19	.754	3.825	2.131	2.011
			20 by 20	.813	4.234	2.292	2.222
			21 by 21	.900	4.658	2.571	2.399
			21½ by 21½	.929	4.912	2.703	.....
6	124	4.75	19 by 19	.773	3.938	2.056	1.808
			22 by 22	1.047	5.321	2.747	2.540
			23 by 23	1.144	5.815	3.012	2.787
7	150	6.00	20 by 20	1.135	5.702	3.085	2.840
			22 by 22	1.390	6.874	3.526	3.351
			24 by 24	1.624	8.130	4.143	3.916
8	179	6.00	20 by 20	1.311	4.954	3.350	3.051
			22 by 22	1.605	7.734	4.011	3.774
			24 by 24	1.879	9.146	4.716	4.392
9	200	6.33	22 by 22	1.898	9.004	5.039	4.676
			24 by 24	2.250	10.670	5.891	5.644
			26 by 26	2.583	12.476	6.920	6.561
10	220	5.37	22 by 22	2.368	11.009	5.950	5.521
			24 by 24	2.857	13.098	7.022	6.561
			26 by 26	3.287	15.243	8.168	.....
11	226	5.88	22 by 22	3.229	.....	7.272	7.302
			24 by 24	.....	.....	9.097	8.466

[1] Rate of exchange used in converting from sterling: July, 1914, at par; September, 1920, 72.13 per cent of par; August, 1921, 75.08 per cent of par; Oct. 2, 1922, 90.14 per cent of par.

TABLE 9.—*Retail price in the United States of imported linen damask tablecloths and napkins of different qualities, 1914 and 1922.*

No.	Tablecloths.			Napkins.			
	Price per cloth 72 by 72 inches.			Size.	Price per dozen.		
	Nov. 30, 1914.	Dec. 15, 1922.	Per cent increase.		Nov. 30, 1914.	Dec. 15, 1922.	Per cent increase.
				Inches.			
1	$3.50	$8.50	143	.....	[1] $3.25	[2] $9.50	.....
2	5.00	13.50	170	22 by 23.....	5.50	14.50	164
3	7.25	17.50	141	27 by 28.....	9.00	26.00	189
4	10.50	24.00	129	.....do.....	14.50	36.00	148

[1] 20 by 20½ inches. [2] 22 by 22 inches.

TABLE 10.—*Net wholesale selling price per linear yard in the United States of imported bleached linen cambrics, 1921 and 1922.*

Width.	Threads per square inch.	Jan. 15, 1921.	Sept. 21, 1922.	Width.	Threads per square inch.	Jan. 15, 1921.	Sept. 21, 1922.
Inches.		*Cents.*	*Cents.*	*Inches.*		*Cents.*	*Cents.*
36.....	104	33.2	28.7	45.....	104	41.5	35.4
	125	38.1	33.7		125	47.5	41.7
	146	47.9	39.7		146	59.9	49.3
	167	56.3	46.6		167	70.7	57.7
	188	63.8	57.3		188	79.9	71.1
40.....	104	36.8	31.6	48.....	104	44.1	37.9
	125	42.1	37.2		125	50.7	44.6
	146	53.0	43.9		146	63.6	52.6
	167	62.5	51.5		167	75.3	61.7
	188	70.5	63.1		188	85.2	76.0
42.....	104	38.5	33.2				
	125	44.1	39.0				
	146	55.6	45.9				
	167	65.3	53.7				
	188	73.9	66.0				

TABLE 11.—*Net wholesale selling price per linear yard in the United States of imported bleached linen sheers, 1921 and 1922.*

Width.	Threads per square inch.	Jan. 15, 1921.	Sept. 21, 1922.	Width.	Threads per square inch.	Jan. 15, 1921.	Sept. 21, 1922.
Inches.		*Cents.*	*Cents.*	*Inches.*		*Cents.*	*Cents.*
36.....	120	38.9	36.3	45.....	120	48.4	44.8
	130	42.3	40.1		130	52.6	49.7
	140	46.5	39.7		140	58.0	55.9
	150	50.7	50.6		150	63.3	62.8
40.....	120	42.8	39.9	48.....	120	51.4	47.9
	130	46.5	44.3		130	56.0	53.0
	140	51.4	49.9		140	62.0	59.7
	150	56.4	55.7		150	67.7	66.9
42.....	120	44.9	41.7				
	130	48.8	46.4				
	140	53.8	52.1				
	150	58.8	58.2				

TABLE 12.—*Foreign mill price and wholesale selling price in the United States of linen goods manufactured in Ireland.*

No.[2]	Unit.	Currency price.[1]					Sterling price.[1]			
		Pre-war.		October, 1921.	May, 1922.	December, 1922.	Pre-war.	October. 1921.	May, 1922.	December, 1922.
1	Yard.....	May, 1914.....	$0.29	$0.78	$0.82	$0.64	$0.16	$0.44	$0.45	$0.37
4	.....do.....	.....do.....	.25	.61	.71	.58	.15	.45	.43	.33
7	.....do.....	January, 1914.	.24	.65	.41	.....	.15	.38	.30	.....
10	.....do.....	.....do.....	.17	.44	.....	.48	.09	.25	.....	.25
17	.....do.....	.....do.....	.21	.48	.50	.53	.12	.31	.29	.27
19	.....do.....	May, 1915.....	.44	.58	.65	.68	.23	.38	.39	.39
20	.....do.....	June, 1913.....	.22	.49	.49	.55	.13	.26	.28	.30
26	.....do.....	July, 1914.....	.34	.82	.63	.....	.19	.47	.37	.....

[1] The sterling price is the foreign-mill price, while the currency price is the wholesale selling price in the United States. Sterling prices have been converted on the basis of exchange at par for the pre-war period; 80.1 per cent of par for October, 1921, 91.4 per cent of par for May, 1922; and 95.3 per cent of par for December, 1922.

[2] For description of goods see Table 3, p. 20.

TABLE 13.—*Domestic production of linen goods.*

[Federal Census.]

Census year.	Establishments.	Production of woven goods.		Total value of all products.[1]	Proportion which woven goods constitutes of the total value of all products.	Wage earners.	Wages.
		Quantity.	Value.				
	Number.	*Sq. yds.*			*Per cent.*	*Number.*[2]	
1899.....	18	6,867,862	$796,001	$4,368,159	18.2	3,283	$1,036,839
1904.....	15	(3)	(3)	5,856,388	.....	3,811	1,324,621
1909.....	15	10,460,993	1,574,653	6,385,218	24.7	3,573	1,213,211
1914.....	21	10,799,628	1,765,798	6,959,708	25.4	3,567	1,386,117
1919.....	10	14,342,000	3,799,000	6,998,046	54.3	1,890	1,635,642
1921.....	13	8,945,000	3,537,000	7,389,000	47.9	2,317	1,957,000

[1] Includes woven goods, thread, twine, yarn for sale, etc.
[2] Monthly average.
[3] Data not available.

TABLE 14.—*General imports, by country of origin, of flax, hemp, or ramie fabrics, 1903–1921.*

Fiscal year.	Total imports.	Imported from—					
		United Kingdom.	Austria-Hungary.	Belgium.	France.	Germany.	Other countries.
	Sq. yds.	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*
1903–1906 (average)	107,267,681	82,885,681	4,873,329	6,858,804	662,911	11,024,706	962,250
1907–1910 (average)	121,278,044	94,789,329	3,834,986	10,116,649	2,085,368	9,197,269	1,254,443
1911–1914 (average)	118,240,972	91,102,815	1,266,327	13,839,540	3,819,656	7,720,161	492,473
1914	92,288,007	69,385,378	1,080,805	14,303,632	3,027,729	3,954,962	535,501
1915	61,968,107	56,381,154	115,603	3,450,249	602,276	523,037	895,788
1916	53,398,542	51,618,715	4,748	1,197,596	387,333	71,946	118,204
1917	38,554,586	38,064,606	.....	179,844	216,394	1,691	92,051
1918	26,096,752	25,698,254	.....	.....	176,579	.....	221,919
1919 [1]	19,096,363	18,936,343	.....	.....	69,307	2,044	88,669
1920 [1]	46,452,978	42,801,017	[2] 150,505	2,797,072	214,329	194,665	295,390
1921 [1]	32,934,306	28,991,154	[2] 39,448	3,458,847	126,102	142,628	176,127

[1] Calendar year. [2] Austria and Czechoslovakia combined.

TABLE 15.—*Woven fabrics of flax, hemp, or ramie—Total imports for consumption 1898–1922.*[1]

Fiscal year.	Quantity.	Value.	Duty collected.	Average value per square yard.	Actual and computed equivalent ad valorem rate of duty.
	Square yards.				*Per cent.*
1898	46,253,306	$6,773,355	$3,280,136	$0.146	48.43
1899	72,358,954	10,876,163	5,219,200	.150	47.99
1900	77,526,779	12,727,830	6,140,409	.164	48.24
1901	60,751,271	11,767,713	5,566,941	.194	47.31
1902	72,871,318	14,198,979	6,608,398	.195	46.54
1903	98,017,929	15,040,325	7,013,190	.153	46.63
1904	100,679,461	15,447,608	7,095,263	.153	45.93
1905	102,542,677	15,620,961	6,986,555	.152	44.73
1906	117,213,566	17,968,093	7,980,877	.153	44.42
1907	120,347,071	20,292,329	8,976,460	.169	44.24
1908	94,526,955	16,509,541	7,252,533	.175	43.93
1909	123,045,640	18,605,755	8,280,813	.151	44.51
1910	141,489,520	20,828,848	9,587,384	.147	46.03
1911	115,761,470	18,233,422	8,482,925	.158	46.52
1912	128,084,265	20,241,586	9,267,800	.158	45.79
1913	134,442,203	21,607,036	9,779,408	.161	45.26
1914	92,129,629	14,049,822	4,639,160	.153	33.02
1915	64,833,826	9,908,605	2,972,577	.153	30.00
1916	57,632,777	11,222,908	3,366,871	.195	30.00
1917	49,709,196	13,020,526	3,988,244	.262	30.63
1918	29,716,252	11,069,321	3,405,460	.373	30.76
1918 [2]	6,603,538	3,076,187	963,803	.466	31.33
1919 [3]	20,882,537	10,591,529	3,249,190	.507	30.68
1920 [3]	35,094,760	21,365,194	6,540,675	.599	30.61
1921 [3]	36,594,557	17,005,531	5,193,294	.465	30.54
Jan. 1 to Sept. 21, 1922	49,262,126	17,932,861	5,478,619	.364	30.55

[1] During the period 1898 to 1902, inclusive, the quantity of fabrics on which the ordinary duty did not amount to 50 per cent was not shown. During the period 1898–1909, inclusive, fabrics weighing less than 4½ ounces per square yard and containing not more than 100 threads to the square inch were not shown separately. During the period Oct. 3, 1912, to June 30, 1916, fabrics other than plain woven were not shown separately. See Tables 16, 17, and 18.
[2] July 1 to Dec. 31.
[3] Calendar year.

TABLE 16.—*Woven fabrics of flax, hemp, or ramie—Imports for consumption, 1898–1922.*

(Quantity—Square yards).

Fiscal year.	Weighing 4½ ounces or more per square yard and containing to the square inch—				All 4½ ounces or over on which the ordinary duty does not amount to 50 per cent.[1]	Weighing less than 4½ ounces per square yard and containing to the square inch—		Total.
	Not more than 60 threads.	More than 60 and not more than 120 threads.	More than 120 and not more than 180 threads.	More than 180 threads.		Not more than 100 threads.[2]	More than 100 threads.	
1898	8,917,052	14,956,443	4,559,417	789,742	.....	.....	17,030,652	46,253,306
1899	12,583,395	22,573,789	6,550,983	1,099,188	.....	.....	29,551,599	72,358,954
1900	12,652,132	24,471,723	8,800,282	1,490,572	.....	.....	30,112,070	77,526,779
1901	8,284,785	17,163,824	7,545,975	1,112,793	.....	.....	26,643,894	60,751,271
1902	7,699,896	19,652,070	8,046,671	1,143,929	.....	.....	36,328,752	72,871,318
1903	5,983,112	20,850,281	9,826,342	1,375,399	21,714,207	.....	38,268,588	98,017,929
1904	4,018,735	18,719,303	9,712,079	1,439,880	23,795,500	.....	42,993,964	100,679,461
1905	3,217,007	16,368,858	8,416,069	1,322,780	23,642,085	.....	49,575,878	102,542,677
1906	4,417,052	18,219,795	9,386,270	1,646,756	24,597,733	.....	58,945,960	117,213,566
1907	2,550,989	16,886,329	10,377,936	1,562,125	30,430,174	.....	58,539,518	120,347,071
1908	798,751	10,486,292	6,268,699	816,121	29,686,809	.....	46,470,283	94,526,955
1909	6,390,544	[3] 20,244,318	8,370,157	1,201,081	28,103,873	.....	58,735,667	123,045,640
1910	6,320,983	25,150,420	12,827,834	1,717,258	38,713,359	9,172,273	47,587,393	141,489,520
1911	3,149,950	21,183,494	12,470,014	1,586,573	36,422,912	15,740,253	25,208,274	115,761,470
1912	3,073,467	21,625,383	11,817,569	1,501,897	40,807,002	26,389,563	22,869,384	128,084,265
1913	1,329,076	[4] 18,173,536	[5] 10,743,556	[6] 1,382,917	50,983,445	32,646,559	19,183,114	134,442,203
1914[7]	64,023	[8] 2,449,272	[9] 1,523,255	[10] 146,480	6,106,531	3,164,455	2,857,007	16,311,023

Fiscal year.	Plain woven.	Other than plain woven.[11]	Total.
1914[12]	[12] 75,818,606	.....	75,818,606
1915	64,833,826	.....	64,833,826
1916	57,632,777	.....	57,632,777
1917	44,247,931	5,461,265	49,709,196
1918	25,496,039	4,220,213	29,716,252
1918[14]	5,187,174	1,416,364	6,603,538
1919[15]	18,510,357	2,372,180	20,882,537
1920[15]	[16] 32,122,414	[17] 3,572,346	35,694,760
1921[15]	33,534,965	3,059,592	36,594,557
1922[15]	45,213,481	4,048,645	49,262,126

[1] Quantity not stated prior to 1903.
[2] Not separately stated prior to 1910.
[3] Includes 4,062 square yards, valued at $498 (free), sec. 12, act of July 24, 1897.
[4] Includes 3,621 square yards valued at $674 (free), sec. 5, act of Aug. 24, 1912.
[5] Includes 8,622 square yards, valued at $2,364 (free), sec. 5, act of Aug. 24, 1912.
[6] Includes 4,354 square yards, valued at $2,021 (free) sec. 5, act of Aug. 24, 1912.
[7] July 1 to Oct. 3, 1913.
[8] Includes 963 square yards, valued at $297 (free), sec. *IV* J5, act of Oct. 3, 1913.
[9] Includes 8,631 square yards, valued at $2,572 (free), sec. *IV* J5, act of Oct. 3, 1913.
[10] Includes 71,797 square yards, valued at $683 (free), sec. *IV* J5, act of Oct. 3, 1913; and 175 square yards, valued at $39 (free), for use of foregn ministers.
[11] Not separately stated for 1914 (Oct. 4, 1913, to June 30, 1914), 1915, and 1916.
[12] Oct. 4, 1913, to June 30, 1914.
[13] Includes 71,797 square yards, valued at $23,414 (free), sec. *IV* J5, act of Oct. 3, 1913.
[14] July 1 to Dec. 31.
[15] Calendar year.
[16] Includes 118,374 square yards, valued at $22,407 (free), from Philippine Islands.
[17] Includes 6,505 square yards, valued at $1,850 (free), from Philippine Islands.
[18] Jan. 1 to Sept. 21.

TABLE 17.—*Woven fabrics of flax, hemp, or ramie—Imports for consumption, 1898–1922.*

(Value.)

Fiscal year.	Weighing 4½ ounces or more per square yard and containing to the square inch—				All 4½ ounces or over on which the ordinary duty does not amount to 50 per cent.[1]	Weighing less than 4½ ounces per square yard and containing to the square inch—		Total.
	Not more than 60 threads.	More than 60 and not more than 120 threads.	More than 120 and not more than 180 threads.	More than 180 threads.		Not more than 100 threads.[2]	More than 100 threads.	
1898	$661,343	$1,618,511	$908,419	$280,905	$1,144,640	.....	$2,159,537	$6,773,355
1899	925,544	2,332,694	1,352,230	376,548	2,201,502	.....	3,687,645	10,876,163
1900	951,807	2,609,869	1,880,061	513,573	2,845,873	.....	3,926,647	12,727,830
1901	663,558	1,873,105	1,704,009	410,229	3,452,591	.....	3,664,221	11,767,713
1902	616,433	2,142,739	1,851,652	420,052	4,196,432	.....	4,971,671	14,198,979
1903	481,375	2,317,854	2,214,053	505,753	4,242,398	.....	5,278,892	15,040,325
1904	325,699	2,085,219	2,211,055	524,539	4,323,407	.....	5,977,639	15,447,608
1905	264,489	1,814,567	1,969,575	496,199	4,106,822	.....	6,969,309	15,620,961
1906	371,800	2,049,161	2,182,332	553,626	4,401,163	.....	8,410,011	17,968,093
1907	218,406	1,980,445	2,498,784	588,445	5,774,558	.....	9,231,691	20,292,329
1908	71,380	1,278,497	1,589,759	328,613	5,904,581	.....	7,336,711	16,509,541
1909	506,650	[3] 2,256,721	1,936,846	422,097	5,000,210	.....	8,483,231	18,605,755
1910	510,259	2,796,314	2,946,925	637,295	6,415,202	$924,823	6,598,030	20,828,848
1911	268,846	2,406,574	2,944,452	605,978	6,435,006	1,591,838	3,980,728	18,233,422
1912	258,947	2,504,952	2,876,887	595,474	7,561,691	2,637,274	3,806,361	20,241,586
1913	109,740	[4] 2,152,832	[5] 2,683,306	[6] 537,987	9,274,650	3,601,578	3,246,943	21,607,036
1914[7]	5,578	[8] 294,797	[9] 371,876	[10] 58,344	1,214,689	345,963	535,513	2,826,760

Fiscal year.	Plain woven.	Other than plain woven.[11]	Total.
1914[12]	[13] $11,223,062	.....	11,223,062
1915	9,908,605	.....	9,908,605
1916	11,222,908	.....	11,222,908
1917	11,378,786	$1,641,740	13,020,526
1918	9,371,450	1,697,871	11,069,321
1918[14]	2,255,248	820,939	3,076,187
1919[15]	9,154,923	1,436,606	10,591,529
1920[15]	[16] 18,595,476	[17] 2,769,718	21,365,194
1921[15]	15,100,589	1,904,942	17,005,531
1922[15]	15,957,647	1,975,214	17,932,861

See Table 16 for notes.

TABLE 18.—*Woven fabrics of flax, hemp, or ramie—Imports for consumption, 1898–1922.*

(Duties collected.)

Fiscal year.	Weighing 4½ ounces or more per square yard and containing to the square inch—				All 4½ ounces or over on which the ordinary duty does not amount to 50 per cent.	Weighing less than 4½ ounces per square yard and containing to the square inch—		Total.
	Not more than 60 threads.	More than 60 and not more than 120 threads.	More than 120 and not more than 180 threads.	More than 180 threads.		Not more than 100 threads.[1]	More than 100 threads.	
1898	$354,451	$896,855	$546,091	$155,348	$572,320	.....	$755,071	$3,280,136
1899	497,873	1,320,587	798,728	211,891	1,099,445	.....	1,290,676	5,219,200
1900	506,955	1,455,933	1,092,035	288,223	1,422,937	.....	1,374,326	6,140,409
1901	344,051	1,033,937	963,961	223,220	1,726,295	.....	1,275,477	5,566,941
1902	319,678	1,183,254	1,038,296	228,969	2,098,116	.....	1,740,085	6,608,398
1903	249,117	1,268,739	1,253,797	275,511	2,118,517	.....	1,847,522	7,013,190
1904	168,038	1,140,347	1,246,041	286,966	2,161,703	.....	2,092,168	7,095,263
1905	135,644	994,514	1,095,836	267,910	2,053,402	.....	2,439,249	6,986,555
1906	188,839	1,115,793	1,217,876	314,296	2,200,579	.....	2,943,494	7,980,877
1907	110,164	1,058,508	1,372,311	317,125	2,887,272	.....	3,231,080	8,976,460
1908	35,392	671,922	853,050	172,035	2,952,288	.....	2,567,846	7,252,533
1909	263,830	1,233,474	1,083,263	234,726	2,496,399	.....	2,969,121	8,280,813
1910	263,695	1,530,531	1,653,747	345,742	3,206,950	$277,447	1,309,272	9,587,384
1911	133,978	1,304,518	1,631,537	324,585	3,217,503	477,551	1,393,253	8,482,925
1912	131,470	1,346,184	1,572,120	313,813	3,780,813	791,182	1,332,218	9,267,800
1913	56,181	1,145,320	1,448,378	284,860	4,627,803	1,080,473	1,136,393	9,779,408
1914[2]	2,794	155,678	201,669	30,360	597,559	103,789	187,428	1,279,277
			Plain woven.	Other than plain woven.[3]				
1914[4]	.....	.....	$3,359,883	.....	.....	.....	.....	3,359,883
1915	.....	.....	2,972,577	.....	.....	.....	.....	2,972,577
1916	.....	.....	3,366,871	.....	.....	.....	.....	3,366,871
1917	.....	.....	3,413,635	$574,609	.....	.....	.....	3,988,244
1918	.....	.....	2,811,205	594,255	.....	.....	.....	3,405,460
1918[5]	.....	.....	676,515	287,288	.....	.....	.....	963,803
1919[6]	.....	.....	2,746,378	502,812	.....	.....	.....	3,249,190
1920[6]	.....	.....	5,571,921	968,754	.....	.....	.....	6,540,675
1921[6]	.....	.....	4,526,564	666,730	.....	.....	.....	5,193,294
1922[7]	.....	.....	4,787,294	691,325	.....	.....	.....	5,478,619

See Table 16 for notes.

TABLE 19.—*Woven fabrics of flax, hemp, or ramie—Imports for consumption, 1898–1922.*

(Value per square yard and equivalent ad valorem rate of duty.)

Fiscal year.	Weighing 4½ ounces or more per square yard and containing to the square inch—								All 4½ ounces or over on which the ordinary duty does not amount to 50 per cent.		Weighing less than 4½ ounces per square yard and containing to the square inch—				Total.	
	Not more than 60 threads.		More than 60 and not more than 120 threads.		More than 120 and not more than 180 threads.		More than 180 threads.				Not more than 100 threads.[2]		More than 100 threads.			
	Value per square yard.	Actual and computed ad valorem rate.	Value per square yard.	Actual and computed ad valorem rate.	Value per square yard.	Actual and computed ad valorem rate.	Value per square yard.	Actual and computed ad valorem rate.	Value per square yard.[1]	Actual and computed ad valorem rate.	Value per square yard.	Actual and computed ad valorem rate.	Value per square yard.	Actual and computed ad valorem rate.	Value per square yard.	Actual and computed ad valorem rate.
1898	$0.074	53.59	$0.109	55.41	$0.200	60.11	$0.356	55.30	.....	50.00	.....	.....	$0.126	35.00	$0.146	48.43
1899	.074	53.79	.103	56.61	.206	59.07	.343	56.27	.....	50.00	.....	.....	.125	35.00	.150	47.99
1900	.075	53.26	.107	55.75	.214	58.09	.344	56.12	.....	50.00	.....	.....	.130	35.00	.164	48.24
1901	.081	51.85	.109	55.20	.225	56.56	.369	54.41	.....	50.00	.....	.....	.136	35.00	.194	47.31
1902	.080	51.86	.109	55.23	.230	56.07	.367	54.51	.....	50.00	.....	.....	.137	35.00	.195	46.54
1903	.080	51.76	.111	54.76	.225	56.63	.368	54.47	$0.195	50.00	.....	.....	.138	35.00	.153	46.63
1904	.081	51.60	.111	54.69	.228	56.36	.364	54.70	.182	50.00	.....	.....	.139	35.00	.153	45.93
1905	.082	51.29	.111	54.81	.234	55.64	.375	53.99	.174	50.00	.....	.....	.141	35.00	.152	44.73
1906	.084	50.79	.112	54.45	.233	55.81	.336	56.77	.179	50.00	.....	.....	.143	35.00	.153	44.42
1907	.086	50.44	.116	53.45	.241	54.92	.377	53.89	.190	50.00	.....	.....	.158	35.00	.169	44.24
1908	.089	49.58	.122	52.56	.253	53.66	.403	52.34	.199	50.00	.....	.....	.158	35.00	.175	43.93
1909	[3].079	[3]52.07	.111	54.66	.231	55.93	.351	55.61	.178	50.00	.....	.....	.144	35.00	.151	44.51
1910	.081	51.67	.111	54.73	.230	56.12	.371	54.25	.166	50.00	$0.101	30.00	.139	34.98	.147	46.03
1911	.083	50.97	.114	54.21	.236	55.41	.382	53.56	.177	50.00	.101	30.00	.158	35.00	.158	46.52
1912	.084	50.77	.116	53.74	.234	54.65	.396	52.70	.185	50.00	.100	30.00	.166	35.00	.158	45.79
1913	[4].083	[4]51.19	[5].118	[5]53.20	[6].250	[6]54.00	.389	52.95	.182	50.00	.110	30.00	.169	35.00	.161	45.26
1914[7]	[8].087	[8]50.09	[9].120	[9]52.81	[10].244	[10]54.23	.398	52.04	.199	50.00	.109	30.00	.187	35.00	.173	45.25
							Plain woven.		Other than plain woven.[7]							
							Value per square yard.	Actual and computed ad valorem rate.	Value per square yard.	Actual and computed ad valorem rate.						
1914[11]	.....						[12]$0.148	[12]29.94	.....	.....	.....				$0.148	29.94
1915	.....						.153	30.00	.....	.....	.....				.153	30.00
1916	.....						.195	30.00	.....	.....	.....				.195	30.00
1917	.....						.257	30.00	$0.301	35.00	.....				.262	30.63
1918	.....						.368	30.00	.402	35.00	.....				.373	30.76
1918[13]	.....						.435	30.00	.580	35.00	.....				.466	31.33
1919[14]	.....						.495	30.00	.606	35.00	.....				.507	30.68
1920[14]	.....						[15].579	[15]29.96	[16].775	[16]34.98	.....				.599	30.61
1921[14]	.....						.456	30.00	.623	35.00	.....				.465	30.54
1922[17]	.....						.353	30.00	.483	35.00	.....				.364	30.55

See Table 16 for notes.

TABLE 20.—*Pile fabrics of flax, hemp, or ramie—Imports for consumption—1898–1922.*[1]

Fiscal year.	Quantity.[2]	Value.	Duty collected.	Value per unit of quantity.[2]	Actual and computed ad valorem rate.
	Square yards.				*Per cent.*
1898[3]		$91,023	$54,614		60
1899		111,848	67,109		60
1900		181,147	108,688		60
1901		181,042	108,625		60
1902		185,339	111,203		60
1903		209,314	125,588		60
1904		190,080	114,048		60
1905		227,121	136,273		60
1906		251,555	150,933		60
1907		172,337	103,403		60
1908		180,257	108,154		60
1909		190,876	114,526		60
1910		219,488	131,692		60
1911		202,647	121,588		60
1912		234,887	140,932		60
1913		235,628	141,376		60
1914[4]		33,077	19,846		60
1914[5]		197,145	78,858		40
1915		50,744	20,297		40
1916		27,267	10,906		40
1917		9,734	3,893		40
1918		3,603	1,441		40
1919	23,394	10,322	4,128	$0.441	40
1920	16,198	18,683	7,473	1.153	40
1921	30,371	55,209	22,084	1.818	40
1922	67,584	85,994	34,398	1.272	40

[1] Prior to Oct. 3, 1914: "Pile fabrics of which flax is the component material of chief value"; after Oct. 3, 1914: "Pile fabrics * * * composed of flax, hemp, or ramie, or of which flax, hemp, or ramie is the component material of chief value."
[2] First stated in 1919.
[3] Not separately stated prior to 1898.
[4] July 1 to Oct. 3, 1913.
[5] Oct. 3, 1913, to June 30, 1914.

TABLE 21.—*Manufactures of pile fabrics of flax, hemp, or ramie—Imports for consumption—1910–1922.*[1]

Fiscal year.	Value.[2]	Duty collected.	Actual and computed ad valorem rate.	Fiscal year.	Value.[2]	Duty collected.	Actual and computed ad valorem rate.
			Per cent.				*Per cent.*
1910[3]	$855	$513	60	1916	$806	$322	40
1911				1917	2,235	894	40
1912	1,081	648	60	1918	181	72	40
1913	3,491	2,095	60	1919	2,483	993	40
1914[4]				1920	2,534	1,013	40
1914[5]	1,815	726	40	1921	29,390	11,756	40
1915	988	395	40	1922	7,475	2,890	40

[1] Prior to Oct. 3, 1914, only manufactures of pile fabrics of which flax was the component material of chief value were included; beginning with Oct. 4, 1914, manufactures of pile fabrics composed of hemp or ramie, or of which hemp or ramie was the component material of chief value, were added.
[2] Quantity not stated.
[3] Not separately stated prior to 1910.
[4] July 1, 1913, to Oct. 3, 1913.
[5] Oct. 3, 1913, to June 30, 1914.

TABLE 22.—*Summary of exports of linen piece goods from the United Kingdom, calendar years 1906–1921.*

[Source: Annual Statements of the Trade of the United Kingdom.]

Calendar year.	Piece goods.			Total piece goods.		Value[1] of table linen and handkerchiefs not in the piece, and other manufactures.[2]
	Checked, printed, or dyed, or damask and diaper.	Plain, unbleached or bleached.	Sailcloth.	Quantity.	Value.[1]	
	Linear yds.	*Linear yds.*	*Linear yds.*	*Linear yds.*		
1906	13,372,100	173,334,200	4,251,400	190,957,700	$25,923,627	$6,932,183
1907	14,264,500	166,364,600	4,370,000	184,999,100	26,897,043	7,409,865
1908	14,967,200	132,987,100	3,939,600	151,893,900	20,756,012	6,131,265
1909	23,147,900	197,536,000	3,250,900	223,934,800	27,869,998	7,444,042
1910	21,626,600	195,091,000	3,850,600	220,568,000	29,760,662	8,871,980
1911	16,607,000	173,551,700	3,670,300	193,829,200	27,456,005	9,053,072
1912	17,179,300	191,910,600	3,995,500	213,085,400	29,785,540	9,501,968
1913	16,605,200	172,997,500	4,078,600	193,681,300	29,046,090	9,387,367
1914	14,358,000	161,364,500	3,170,700	178,893,200	26,670,581	9,155,093
1915	12,571,400	114,577,300	1,627,700	128,776,400	24,014,260	7,786,103
1916	12,156,000	130,840,400	1,067,100	144,063,500	32,689,006	9,009,643
1917	7,947,100	94,881,000	710,000	103,538,100	29,212,612	12,004,380
1918	7,480,700	62,548,100	175,400	70,204,200	31,116,917	11,135,131
1919	6,266,800	69,364,600	1,232,200	76,863,600	37,986,142	10,602,609
	Square yds.	*Square yds.*	*Square yds.*	*Square yds.*		
1920	9,887,500	74,610,400	8,546,300	93,044,700	72,682,156	26,781,902
1921	5,650,700	29,962,100	4,349,600	39,642,400	25,542,594	13,096,528

[1] Converted from pounds sterling at par of exchange.
[2] Includes all other manufactures except yarn and thread for sewing.

TABLE 23.—*Total quantity of linen piece goods exported from the United Kingdom and proportion exported to the United States, calendar years 1906–1921.*

[Source: Annual Statements of the Trade of the United Kingdom.]

	1906	1907	1908	1909
	Yards.	*Yards.*	*Yards.*	*Yards.*
Exported to United States:				
Checked, printed, or dyed	5,601,100	5,812,800	6,575,900	11,267,000
Damask or diaper				
Plain—				
Bleached	105,293,400	101,290,000	76,652,600	128,744,800
Unbleached				
Sailcloth	93,200	98,200	132,800	38,700
Total exports to—				
United States	110,987,700	107,201,000	83,358,300	140,050,500
Other foreign countries	46,680,600	41,994,300	37,265,700	44,215,500
British possessions	33,789,400	35,803,800	31,269,900	39,668,800
Grand total exports	190,957,700	184,999,100	151,893,900	223,934,800
Percentage of total exported to United States	58.1	57.9	54.9	62.5

	1910	1911	1912	1913
Exported to United States:				
Checked, printed, or dyed	5,844,600	2,941,300	5,369,500	6,303,300
Damask or diaper				
Plain—				
Bleached	121,085,000	104,195,900	120,074,600	104,417,900
Unbleached				
Sailcloth	45,600	70,000	83,600	50,400
Total exports to—				
United States	126,975,200	107,207,200	125,527,700	110,771,600
Other foreign countries	50,932,100	47,524,900	43,661,700	41,792,500
British possessions	42,660,700	39,097,100	43,896,000	41,117,200
Grand total exports	220,568,000	193,829,200	213,085,400	193,681,300
Percentage of total exported to United States	57.6	55.3	58.9	57.2

TABLE 23.—*Total quantity of linen piece goods exported from the United Kingdom and proportion exported to the United States, calendar years 1906–1921*—Continued.

	1914	1915	1916	1917
Exported to United States:				
Checked, printed, or dyed	6,730,000	5,697,700	5,263,500	3,547,500
Damask or diaper				
Plain—				
Bleached	105,963,000	63,946,700	69,688,600	49,611,500
Unbleached				
Sailcloth	79,900	48,500	28,800	10,600
Total exports to—				
United States	115,672,900	69,692,900	74,980,900	53,169,600
Other foreign countries	28,664,300	27,068,000	35,125,700	29,212,600
British possessions	34,556,000	37,015,500	33,956,900	21,155,900
Grand total exports	178,893,200	128,776,400	144,063,500	103,538,100
Percentage of total exported to United States	64.7	54.1	52.0	51.4

	1918	1919	1920	1921
Exported to United States:	*Yards.*	*Yards.*	*Square yards.*	*Square yards.*
Checked, printed, or dyed	3,181,500	1,200,600	3,725,800	3,405,700
Damask or diaper			945,200	802,400
Plain—				
Bleached	23,492,100	21,780,200	18,728,400	10,665,600
Unbleached			20,450,600	9,966,400
Sailcloth		15,400	1,152,800	540,900
Total exports to—				
United States	26,673,600	22,996,200	44,902,800	24,381,000
Other foreign countries	28,230,600	40,438,200	29,114,200	7,530,200
British possessions	15,300,000	13,429,000	19,027,700	8,051,200
Grand total exports	70,204,200	76,863,600	93,044,700	39,962,400
Percentage of total exported to United States	38.0	29.9	48.3	61.0

TABLE 24.—*Total value*[1] *of manufactures of linen exported from the United Kingdom, calendar years 1906–1921.*

[Source: Annual Statements of the Trade of the United Kingdom.]

	1906	1907	1908	1909
Exported to United States:				
Table linen, not in the piece	(2)	(2)	(2)	(2)
Handkerchiefs, not in the piece	(2)	(2)	(2)	(2)
Linen manufactures, unenumerated[3]	$3,911,561	$4,173,501	$3,155,502	$3,999,621
Total exports to—				
United States	3,911,561	4,173,501	3,155,502	3,999,621
Other foreign countries	1,455,278	1,562,458	1,402,764	1,528,762
British possessions	1,565,344	1,673,906	1,572,999	1,915,659
Grand total exports	4,932,183	7,409,865	6,131,265	7,444,042
Percentage of total exported to United States	56.4	56.3	51.4	53.7

	1910	1911	1912	1913
Exported to United States:				
Table linen, not in the piece	(2)	(2)	(2)	(2)
Handkerchiefs, not in the piece	(2)	(2)	(2)	(2)
Linen manufactures, unenumerated[3]	$4,589,572	$4,224,477	$4,189,886	$4,007,305
Total exports to—				
United States	4,589,572	4,224,477	4,189,886	4,007,305
Other foreign countries	1,874,600	2,043,244	2,064,034	2,253,472
British possessions	2,407,808	2,785,351	3,248,048	3,126,590
Grand total exports	8,871,980	9,053,072	9,501,968	9,387,367
Percentage of total exported to United States	51.7	46.7	44.1	42.7

[1] Converted from pound sterling at par of exchange. Quantities not stated.
[2] Included in "Linen manufactures, unenumerated."
[3] Includes all other manufactures except yarn, and thread for sewing.

TABLE 25.—*Total value of manufactures of linen exported from the United Kingdom, calendar years 1906–1921*—Continued.

	1914	1915	1916	1917
Exported to United States:				
Table linen, not in the piece	$1,775,397	$1,482,054	$1,856,638	$3,121,047
Handkerchiefs, not in the piece	2,007,602	1,589,375	1,878,972	2,704,153
Linen manufactures, unenumerated [3]	1,054,337	855,769	1,162,870	2,180,401
Total exports to—				
United States	4,837,336	3,927,198	4,898,380	8,005,601
Other foreign countries	1,479,741	1,421,475	1,528,568	1,919,801
British possessions	2,838,016	2,437,430	2,582,695	2,078,978
Grand total exports	9,155,093	7,786,103	9,009,380	12,004,380
Percentage of total exported to United States	52.8	50.4	54.4	66.7

	1918	1919	1920	1921
Exported to United States:				
Table linen, not in the piece	$3,429,315	$1,857,718	$8,655,562	$7,044,458
Handkerchiefs, not in the piece	2,252,416	1,299,701	3,235,269	2,658,939
Linen manufactures, unenumerated [3]	1,239,103	792,003	3,221,730	2,098,805
Total exports to—				
United States	6,920,834	3,949,422	15,112,561	11,802,202
Other foreign countries	1,942,333	4,055,732	5,935,363	2,274,670
British possessions	2,271,964	2,597,455	5,733,978	4,019,656
Grand total exports	11,135,131	10,602,609	26,781,902	18,096,528
Percentage of total exported to United States	62.2	37.2	56.4	65.2

[3] Includes all other manufactures, except yarn, and thread for sewing.

Rates of duty on fabrics of flax, hemp, or ramie, 1883–1922.

Act of—	Paragraph.	Tariff classification or description.	Rate of duty.
1883	334	Brown and bleached linens, ducks, canvas, paddings, cot bottoms, diapers, crash, huckabacks, handkerchiefs, lawns, or other manufactures of flax * * * or hemp, or of which flax * * * or hemp shall be the component material of chief value not specially enumerated or provided for in this act.	35 per cent ad valorem.
	348	Sail duck, or canvas for sails	30 per cent ad valorem.
	349	Russia and other sheetings of flax, or hemp, brown or white	35 per cent ad valorem.
	350	All other manufactures of hemp * * * or of which hemp * * * shall be the component material of chief value, not specially enumerated or provided for in this act.	Do.
	351	* * * manufactures of * * * ramie * * * not specially enumerated or provided for in this act.	Do.
1890	371	All manufactures of flax or hemp, or of which these substances, or either of them, is the component material of chief value, not specially provided for in this act. *Provided*, That until January first, eighteen hundred and ninety-four [extended to January 1, 1895, by act of March 3, 1893, chap. 216, 26 Stat. 593] such manufactures of flax containing more than 100 threads to the square inch, counting both the warp and filling, shall be subject to a duty of 35 per cent ad valorem in lieu of the duty herein provided.	50 per cent ad valorem.
	374	All manufactures of * * * other vegetable fiber, except flax, hemp or cotton, or of which * * * other vegetable fiber, except flax, hemp or cotton, is the component material of chief value, not specially provided for in this act: Valued at 5 cents per pound or less Valued above 5 cents per pound	 2 cents per pound. 40 per cent ad valorem.
1894	277	All manufactures of flax, hemp, * * * or other vegetable fiber, except cotton, or of which these substances or either of them is the component material of chief value, not specially provided for in this act. (See proviso, par. 371, act of 1890.)	35 per cent ad valorem.
1897	342	All pile fabrics of which flax is the component material of chief value.	60 per cent ad valorem.

Rates of duty on fabrics of flax, hemp, or ramie, 1883–1922—Continued.

Act of—	Paragraph.	Tariff classification or description.	Rate of duty.
1897	346	Woven fabrics * * * not specially provided for in this act, composed of flax, hemp, or ramie, or of which these substances or either of them is the component material of chief value, weighing 4½ ounces or more per square yard:	
		Containing not more than 60 threads to the square inch, counting the warp and filling.	1¼ cents per square yard.
		Containing more than 60 and not more than 120 threads to the square inch.	2¼ cents per square yard.
		Containing more than 120 and not more than 180 threads to the square inch.	6 cents per square yard.
		Containing more than 180 threads to the square inch.....	9 cents per square yard
		And in addition thereto, on all the foregoing.....	30 per cent ad valorem.
		Provided, That none of the foregoing articles in this paragraph shall pay a less rate of duty than 50 per cent ad valorem.	
		Woven fabrics of flax, hemp, or ramie, or of which these substances or either of them is the component material of chief value, including such as is known as shirting cloth, weighing less than 4½ ounces per square yard, containing more than 100 threads to the square inch, counting the warp and filling.	35 per cent ad valorem.
	347	All manufactures of flax, hemp, or ramie, * * * or of which these substances, or either of them, is the component material of chief value, not specially provided for in this act.	45 per cent ad valorem.
1909	353	All pile fabrics, whether or not the pile covers the entire surface, composed of flax, or of which flax is the component material of chief value, and all articles and manufactures made from such fabrics, not specially provided for in this section.	60 per cent ad valorem.
	357	Woven fabrics * * * not specially provided for * * * composed of flax, hemp, or ramie, or of which these substances or any of them is the component material of chief value, weighing 4½ ounces or more per square yard:	
		Containing not more than 60 threads to the square inch, counting the warp and filling.	1¼ cents per square yard.
		Containing more than 60 and not more than 120 threads to the square inch.	2¼ cents per square yard.
		Containing more than 120 and not more than 180 threads to the square inch.	6 cents per square yard.
		Containing more than 180 threads to the square inch.....	9 cents per square yard.
		And in addition thereto, on all the foregoing.....	30 per cent ad valorem.
		Provided, That none of the foregoing * * * fabrics in this paragraph shall pay a less rate of duty than.....	50 per cent ad valorem
	357	Plain woven fabrics * * * of flax, hemp, or ramie, or of which these substances or any of them is the component material of chief value, including such as is known as shirting cloth, weighing less than 4½ ounces per square yard:	35 per cent ad valorem.
		Containing more than 100 threads to the square inch, counting the warp and filling.	35 per cent ad valorem.
		Containing not more than 100 threads to the square inch	30 per cent ad valorem.
	358	* * * all manufactures of flax, hemp, ramie, or other vegetable fiber, or of which these substances, or any of them, is the component material of chief value, not specially provided for in this section.	45 per cent ad valorem.
1913	280	All pile fabrics, whether or not the pile covers the entire surface, composed of flax, hemp, or ramie, or of which flax, hemp, or ramie is the component material of chief value, and all articles and manufactures made from such fabrics, not specially provided for in this section.	40 per cent ad valorem.
	283	Plain woven fabrics * * * of flax, hemp, or ramie, or of which these substances or any of them is the component material of chief value, including such as is known as shirting cloth.	30 per cent ad valorem.
	284	* * * all manufactures of flax, hemp, ramie, or other vegetable fiber, or of which these substances, or any of them, is the component material of chief value, not specially provided for in this section.	35 per cent ad valorem.
1922	1009	Woven fabrics * * * of flax, hemp, or ramie, or of which these substances or any of them is the component material of chief value (except such as are commonly used as paddings or interlinings in clothing):	
		Exceeding 30 and not exceeding 100 threads to the square inch, counting the warp and filling.	55 per cent ad valorem.
		Weighing not less than 4½ and not more than 12 ounces per square yard.	
		Exceeding 12 inches but not exceeding 24 inches in width....	
		Woven fabrics, such as are commonly used for paddings or interlinings in clothing, composed wholly or in chief value of flax, or hemp, or of which these substances or either of them is the component material of chief value:	
		Exceeding 30 and not exceeding 110 threads to the square inch, counting the warp and filling.	Do.
		Weighing not less than 4½ and not more than 12 ounces per square yard.	

Rates of duties on fabrics of flax, hemp, or ramie, 1883–1922—Continued.

Act of—	Paragraph.	Tariff classification or description.	Rate of duty.
1922	1010	Woven fabrics * * * of flax, hemp, ramie, or other vegetable fiber, except cotton, or of which these substances or any of them is the component material of chief value, not specially provided for.	40 per cent ad valorem.
	1011	Plain woven fabrics * * * of flax, hemp, ramie, or other vegetable fiber except cotton, weighing less than 4½ ounces per square yard.	35 per cent ad valorem.
	1012	Pile fabrics, composed wholly or in chief value of vegetable fiber other than cotton, cut or uncut, whether or not the pile covers the whole surface, and manufactures in any form, made or cut from any of the foregoing.	45 per cent ad valorem.
	1013	Table damask composed wholly or in chief value of vegetable fiber other than cotton, and manufactures composed wholly or in chief value of such damask.	40 per cent ad valorem.

Woven fabrics of flax, hemp, or ramie—Comparison of rates of duty under tariff acts of 1897, 1909, 1913, and 1922.[1]

Classification.			1922 rate, ad valorem (per cent).	1913 rate,[2] ad valorem (per cent).	1909				1897		
						Rate.			Rate.		
Width.	Weight (ounces per square yard).	Threads per square inch (number).			Variation in classification threads per square inch (number).	Ad valorem (per cent).	Specific (cents per square yard).	Actual and computed ad valorem (per cent).	Ad valorem (per cent).	Specific (cents per square yard).	Actual and computed ad valorem (per cent).
12 to 24 inches[3]	Less than 4½	Not over 100	35 or 40 per cent.[4]	30 or 35 per cent.	Not over 100	30 per cent	.....	30 per cent	45 per cent	.....	45 per cent.
		Over 100			Over 100	35 per cent	.....	35 per cent	35 per cent	.....	35 per cent.
	4½ to 12	Not over 30	40 per cent	do	60 or less	30 per cent	$0.0175	53.7 per cent.[5]	30 per cent	$0.0175	53.8 per cent.[6]
		31 to 100	55 per cent		61 to 120	do	.0275		do	.0275	
		Over 100	40 per cent		121 to 180	do	.0600		do	.0600	
	More than 12	Any number	do	do	181 or over	do	.0900		do	.0900	
Over 24 inches	Less than 4½	Not over 100	35 or 40 per cent.[4]	do	Not over 100	do	.....	30 per cent	45 per cent	.....	45 per cent.
		Over 100			Over 100	35 per cent	.....	35 per cent	35 per cent	.....	35 per cent.
	4½ to 12	Not over 30	40 per cent	do	60 or less	30 per cent	.0175	53.7 per cent.[5]	30 per cent	.0175	53.8 per cent.[6]
		31 to 100	do		61 to 120	do	.0275		do	.0295	
		Over 100	do		121 to 180	do	.0600		do	.0600	
	More than 12	Any number	do	do	181 or over	do	.0900		do	.0900	

[1] Tailors' paddings and table damask excluded from the act of 1922. Pile fabrics excluded in all acts. Table damask dutiable in act of 1922 at 40 per cent and on physical standards in other acts. Tailors' paddings from 31 to 110 threads to the square inch weighing from 4½ to 12 ounces per square yard are dutiable at 55 per cent and paddings of other weights and thread counts are dutiable at 40 per cent in act of 1922. In other acts paddings were dutiable on the basis of physical standards prescribed.

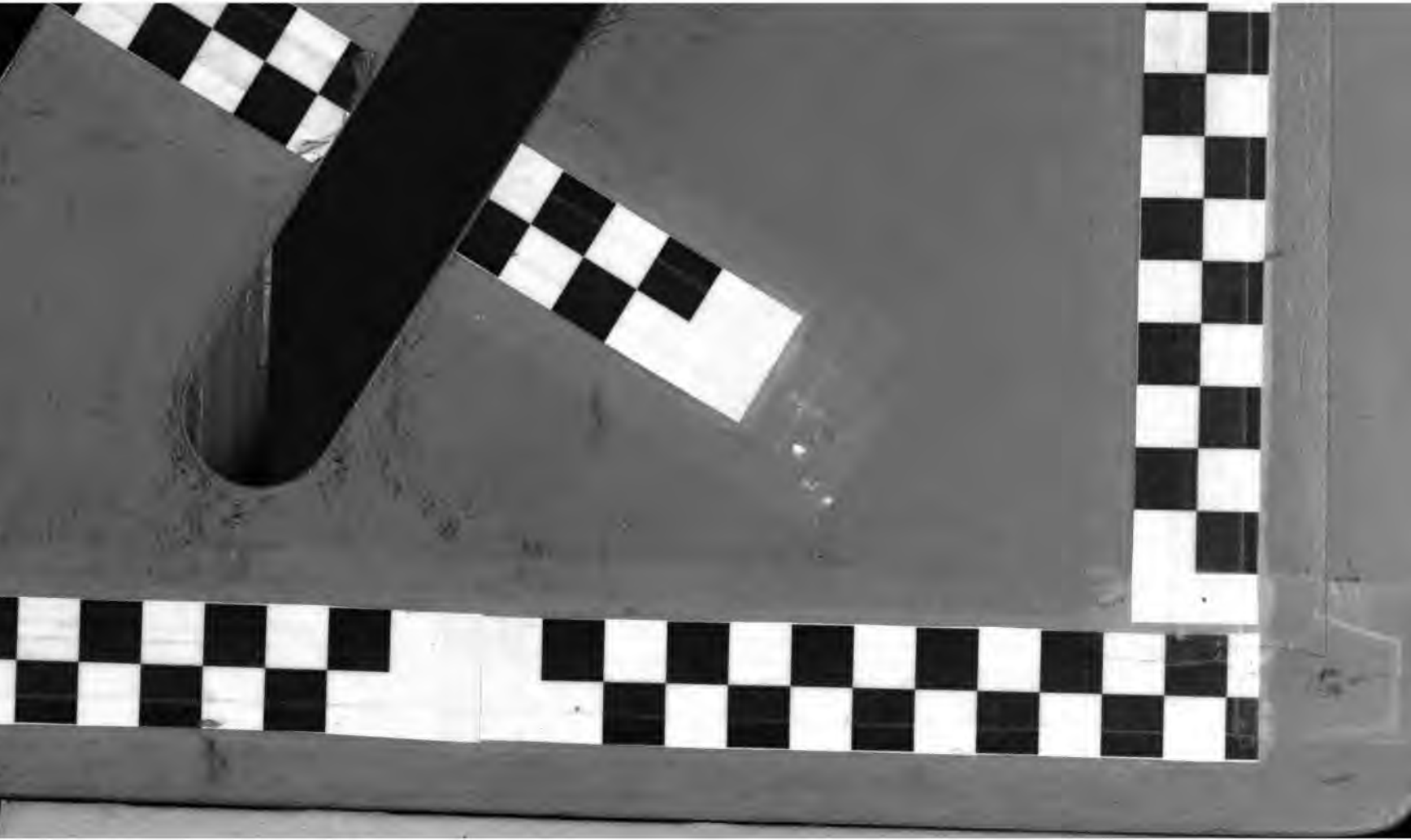
[2] 30 per cent if plain woven; 35 per cent if other than plain woven.

[3] 12 inches wide or less are "small wares," and are not included in this report.

[4] 35 per cent if plain woven; 40 per cent if other than plain woven.

[5] Based on imports during the period July 1, 1909, to October 3, 1913.

[6] Based on imports during the period July 1, 1897, to June 30, 1909.



UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPHS 262, 279, 284, AND 408 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

JUTE CLOTHS

Paragraph 262:
Jute Webbings

Paragraph 279:
Processed Burlap
Brattice Cloth

Paragraph 284:
Twilled Sacking
Paddings in Chief Value of Jute

Paragraph 408:
Bagging for Covering Raw Cotton
Nonprocessed Burlap
Paddings of All Jute

REVISED EDITION

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Office: Eighth and E Streets NW., Washington, D. C.

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order for paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this, industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act, reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus, by use of this "Introduction and index," the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of John J. Cameron of its staff, and of others.

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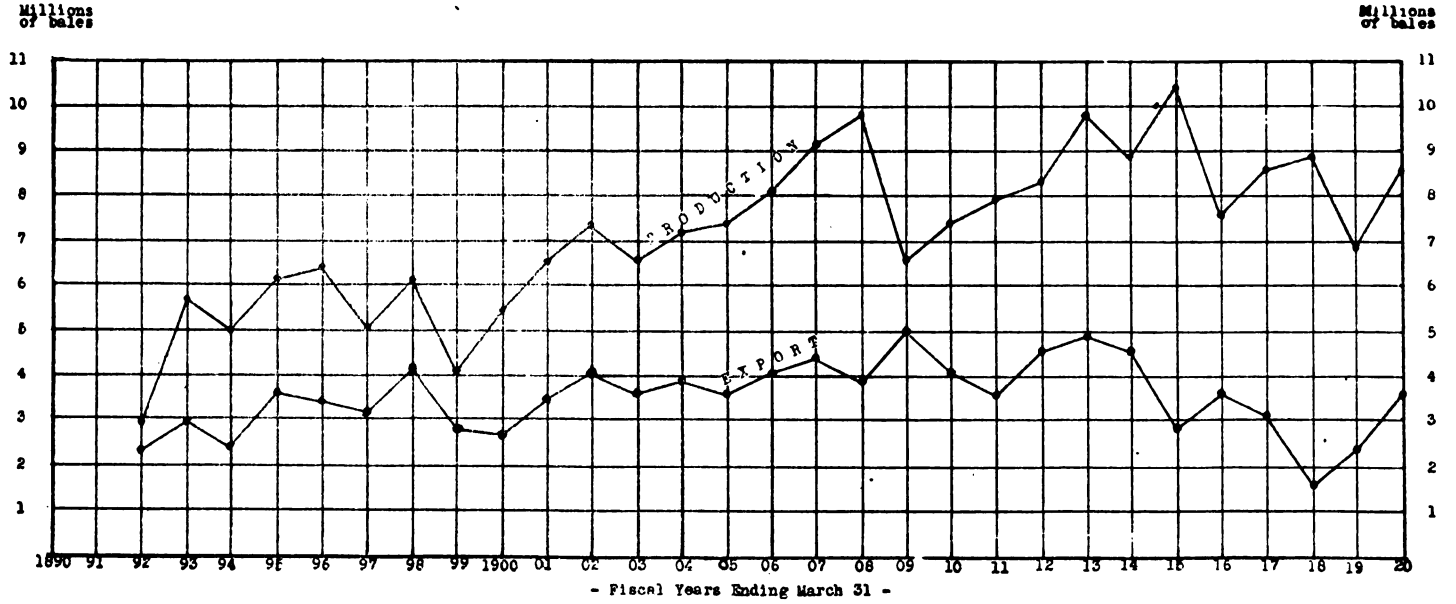
CHART A.—Production and Export of Raw Jute, in bales of 400 pounds each, from British India, 1892-1920.

(*Source:* Statistical Abstracts and Sea-Borne Trade Accounts Relating to British India.)



JUTE CLOTHS.

SUMMARY.

Jute is the world's cheapest fiber and, in quantity grown, is second only to cotton. The average yearly output of raw jute is about 8,000,000 bales of 400 pounds each. The low price of jute has caused jute fabrics to become the world's leading wrapping and sacking material. The causes for the low price of jute are: (1) Heavy production per acre; (2) cheap and abundant labor in British East India, to which country production is confined; (3) the ease with which the fiber can be prepared for spinning.

There are four leading cloths manufactured from the jute fiber, the combined domestic consumption of which amounted in 1920 to about 1,100,000,000 yards, principally burlap and cotton bagging. In ascending order of quality and value they commonly rank as follows: (1) Bagging, divided into two classes, (*a*) cotton bagging with single warp usually consisting of about four threads to the square inch, used for covering raw cotton; and (*b*) double-warp (D. W.) bagging, with about 16 threads to the square inch and extensively employed for wrapping; (2) twilled sacking, with about 18 threads to the square inch, enters the United States chiefly as containers for foreign products, principally raw sugar; (3) tarpaulin, with about 30 threads to the square inch, used as covering and as the foundation of waterproofed and brattice cloths, and (4) burlap or hessian, with about 24 threads to the square inch, employed most extensively as bag material, for baling purposes, and as a backing for linoleum.

These cloths are further differentiated by weave, weight, and raw material used in their manufacture. Burlap and cotton bagging are woven with one thread over and one under in both warp and weft. Tarpaulin and double-warp bagging are distinguished by their double-warp construction; two warp threads woven side by side as one. Sacking is usually woven with a plain twill, made by passing each warp thread over two and under one weft thread so as to produce a diagonal effect.

While all four cloths are woven from single jute yarns, sacking, because it is woven with a twill, is excluded from paragraphs 279 and 408 of the act of 1913 by the words "plain woven." Sacking, though a quality of cloth lower than burlap, has not been specially provided for and has been subject to higher duties under the general provisions for manufactures of vegetable fibers. The difference in duties has tended to make imports small.

Plain woven jute fabrics are divided by the act of 1913 into three classes: (1) Bagging for raw cotton, which is defined as "Bagging for cotton * * * not exceeding 16 threads to the square inch, counting the warp and filling, and weighing not less than 15 ounces

per square yard; (2) burlap, burlaplin, double-warp bagging, referred to as plain woven fabrics of single jute yarns, by whatever name known; (3) fabrics of single jute yarns, by whatever name known, bleached, dyed, colored, etc. A distinction between the first two classes of fabrics is urged in view of the market difference in the quality of the cloth and the tariff problems connected with each. Burlap, the finest jute fabric, is practically all imported; cotton bagging, the coarsest, is manufactured mainly in domestic mills. Burlap constitutes the bulk of the cloths falling under the second and third classes.

PROVISIONS IN TARIFF ACT OF 1913.

Par. 408: "Bagging for cotton, gunny cloth, and similar fabrics, suitable for covering cotton, composed of single yarns made of jute, jute butts, jerg, Russian jerg, New Zealand jerg, Norwegian jerg, linen, mill waste, cotton tares, or other material not bleached, dyed, colored, stained, painted, or printed, not exceeding sixteen threads to the square inch, counting the warp and filling, and weighing not less than fifteen ounces per square yard. * * * Free."

Par. 408. "* * * Plain woven fabrics of single jute yarns, by whatever name known, not bleached, dyed, colored, stained, painted, or rendered noninflammable by any process. * * * Free."

Par. 270: Plain woven fabrics of single jute yarns, by whatever name known, bleached, dyed, colored, stained, painted, printed, or rendered noninflammable by any process, 35 per centum ad valorem."

This survey follows the arrangement of the tariff act of 1913. It summarizes the industry and then describes in detail the domestic trade in jute cloths under three headings: Bagging for Covering Raw Cotton; Nonprocessed Burlap; and Processed Burlap.

I. Bagging for Covering Raw Cotton.

Cotton bagging is the coarse loosely woven jute fabric used for covering raw cotton. The leading size is 45 inches wide and weighs 2 pounds. The best domestic grades are made from yarn spun from jute butts—the ends of jute fiber laid aside as being too coarse for the manufacture of burlap. The bulk of the bagging produced in the United States consists of grades manufactured from jute butts mixed with various proportions of old bagging, cordage, and mill wastes.

The American cotton crop in 1920, including linters, was 13,563,208 bales. Allowing 7 yards of bagging to the bale, as ready for shipment, about 97,000,000 yards of covering were required in 1920. The American production of new bagging in the same time amounted to about 52,686,000 yards of 45-inch width. From the sales and estimates made by the leading firms selling each type of bagging, there were used in covering the 1920 crop approximately 46,869,000 linear yards of new bagging; 5,446,000 yards of imported bagging;[1] 7,396,000 yards of rewoven bagging, and 9,706,000 yards of sugar-bag

[1] Imports of bagging in the calendar year 1920 amounted to 7,261,904 square yards, or about 5,446,000 running yards, and in 1921, to 3,372,000 square yards, or about 2,529,000 running yards.

cloth. The remaining 27,625,000 yards, or 28 per cent, consisted of material which had been used before. The amount of secondhand bagging consumed in 1920 was much larger than usual.

Imports in the fiscal years 1892–1920,[2] ranging between a minimum of 618,708 square yards in 1894 and a maximum of 19,817,860 in 1907, averaged 7,728,912 square yards, or 5,796,000 running yards. In the years 1892–1919 the American cotton crop, including linters, averaged 11,597,233 bales. During the last quarter of a century about three-fourths of the total value of foreign bagging consumed in the the United States was furnished by the United Kingdom and all but 2 or 3 per cent of the remainder by British India. In the fiscal years 1914–1919 [3] shipments from the United Kingdom and from British India constituted 77 and 18 per cent, respectively, of the total quantity imported in these years. During 1920 and 1921, however, India furnished 67 and 56 per cent, respectively, as against 32 and 37 per cent by the United Kingdom in the same years.

The bulk of the bagging received from the United Kingdom consists of secondhand bagging and old bagging for remanufacture. The Indian product is superior to the best domestic brands, since it is more closely woven and made entirely from jute butts.

The volume of imports has been small because of the position of the two domestic companies, which are the world's largest manufacturers of bagging, and because of the risks involved in supplying a demand which fluctuates from season to season. These two companies have been long prominent in this field. Each has a large organization, and by making a number of products closely related to bagging they save in overhead expenses.

The first of these companies and a subsidiary of the second, the latter incorporated with a capital stock of $5,000,000, are now each building a mill in India. Each mill has already received shipments of the bagging machinery formerly operated in the United States. One of the mills will run solely on bagging, whereas the second will produce both bagging and burlap.

TABLE 1.—*Domestic production and imports of bagging for covering raw cotton*

Fiscal year.	Domestic production.	Imports for consumption.		Duty.	Value per unit of quantity.	Equivalent ad valorem rate.
		Quantity.	Value.			
	Square yards.	*Square yards.*			*Cents per square yard.*	*Per cent.*
1909	[a] 69,311,288	8,012,434	$413,209	$48,075	5.2	11.63
1910		16,505,542	699,940	99,033	4.2	14.15
1911		13,365,349	623,099	80,192	4.7	12.87
1912		5,778,731	363,751	34,672	6.3	9.53
1913		5,483,595	431,164	32,902	7.9	7.63
1914	[a] 131,827,658	[b] 7,619,472	[b] 491,652	45,716	6.5	9.30
		[c] 9,944,396	[c] 672,494	Free.	6.8	Free.
1915		9,648,484	720,207	Free.	7.4	Free.
1916		2,612,567	222,416	Free.	8.5	Free.
1917		3,483,154	368,920	Free.	10.5	Free.
1918		1,781,889	236,988	Free.	13.2	Free.
1919	[d] 75,205,000	2,913,224	359,571	Free.	12.3	Free.
1920		9,332,239	939,260	Free.	10.1	Free.
1921		4,873,711	511,766	Free.	10.5	Free.
1921 (calendar year)		3,372,000	309,897	Free.	9.2	Free.

[2] 1892 is the first full year for which data regarding the quantity of imports for consumption are available.
[3] The quantities of bagging imported by countries are first given beginning with 1912.
[a] Census, "Bags and bagging," principally bagging.
[b] From July 1, 1913, to Oct. 3, 1913.
[c] From Oct. 4, 1913, to June 30, 1914.
[d] Census, Bagging, new and rewoven, valued at $11,340,000.

II. NONPROCESSED BURLAP.

Burlap is a plain woven cloth made from the best qualities of raw jute, ranging from 27 to 150 inches in width and from 6 to 16 ounces to the linear yard. The standard is the 40 inch, 10½ ounce. Burlap is the world's leading sacking and wrapping material. Four-fifths of that consumed in the United States is made into bags, used as containers for grain, feed, bran, flour, granulated sugar, and for a number of bulky commodities. It is also used for wrapping a great variety of products ranging from cotton cloths to dynamos; for tailor's padding; as the constituent basis of brattice cloth, fireproofed for use as screens in mines; and as upholstery materials and horse clothing. About 33,000,000 square yards were used in 1919 as backings for linoleum and floor cloths.

The domestic production of jute cloths, other than cotton bagging, has always been negligible. The record output in recent years was 7,292,000 linear yards of burlap in 1918—about 1 per cent of the domestic consumption. In 1919 and 1920 production was 5,659,580 and 4,879,642 linear yards, respectively. The above totals do not include fabrics of all jute, or of jute and cotton, used as paddings or interlinings in coats. As in the case of burlap, the production of paddings reached its height in 1918 with 8,540,000 linear yards, and then declined to 4,200,000 yards in 1919 and 4,150,000 yards in 1920. Exclusive of the amount produced by two prisons, eight companies, since 1914, have woven these fabrics, seven participating because of war conditions. Five of these have since discontinued weaving these fabrics.

TABLE 2.—*Domestic production and imports of nonprocessed burlap.*[a]

Year.	Domestic production.	Imports for consumption, fiscal year.		Duty.	Value per unit of quantity.	Equivalent ad valorem rate.
		Quantity.	Value.			
	Linear yards.	*Pounds.*			*Cents per pound.*	*Per cent.*
1910		421,919,388	$21,970,091	$5,807,917	5.1	26.44
1911		379,300,149	20,285,597	5,212,878	5.3	25.70
1912		403,158,124	25,845,785	6,181,779	6.4	23.92
1913		402,960,245	35,811,465	7,676,475	8.9	21.44
1914[b]		92,645,152	8,044,180	1,734,722	8.7	21.56
1914[c]		431,039,133	36,437,228	Free.	8.5	Free.
1915		308,443,353	27,955,560	Free.	7.0	Free.
1916		382,344,357	34,231,997	Free.	8.9	Free.
1917		446,980,546	48,323,839	Free.	10.8	Free.
1918	[d]15,832,000	442,193,870	58,746,318	Free.	13.3	Free.
1919	9,859,580	410,129,359	72,396,222	Free.	17.6	Free.
1920	9,029,642	541,143,114	88,027,296	Free.	16.3	Free.
1921		536,904,927	64,077,225	Free.	11.9	Free.
1921 (calendar year)		474,039,104	41,264,713	Free.	8.7	Free.

[a] Includes all burlaps, specified and nonspecified, from July 1, 1909, to Oct. 3, 1913.
[b] From July 1, 1913, to Oct. 3, 1913, inclusive.
[c] Burlaps, not bleached, dyed, etc.
[d] Burlap, and paddings of jute, or in chief value of jute. To convert these to pounds, a linear yard may be taken as weighing 9 ounces.

The United States is the world's largest consumer of burlap. Imports constitute two-thirds of the jute cloth exported from British India, and one-half of those from Dundee, Scotland, The quantity and value of burlap imported during 1905–1921 [4] from these sources, are shown in the following table:

[4] The quantity of burlap received from different countries is first available for 1905.

TABLE 3.—*Imports of burlap from British India and the United Kingdom compared with total imports.*

Fiscal year.	Total imports, all sources.		From British India.	From United Kingdom.
	Quantity.	Value.	Quantity.	Quantity.
	Pounds.		*Pounds.*	*Pounds.*
1905–1909	317,136,742	$21,379,161	257,022,688	58,672,691
1910–1914	421,383,181	29,420,977	358,704,219	59,867,928
1915–1919	415,483,840	48,331,193	373,514,527	38,020,795
1920	541,113,614	88,020,057	482,932,925	53,402,830
1921	537,034,044	64,086,584	497,668,374	33,753,936
1921 (calendar year)	474,168,221	41,279,072	444,669,569	26,064,594

Calcutta, India, and Dundee, Scotland, are the world's leading jute centers. Burlap imported from Calcutta is used for bag material, and for wrapping and baling purposes, whereas that from Dundee consists of cloth, which requires special machinery or a high grade of workmanship, such as tailors' paddings and backings for linoleum.

Although under the acts of 1897 and 1909 nonprocessed burlap was subject to a duty, averaging 1.65 cents per pound (about 1 cent per linear yard), or 26.75 per cent ad valorem, American manufacturers considered it unprofitable to attempt manufacture in competition with India.

III. PROCESSED BURLAP.

The leading processed cloths falling under paragraph 279 are: (1) Burlap, tarpaulin, and double-warp bagging which have been rendered noninflammable, as brattice cloth; (2) and burlap which has been dyed or printed for upholstery or decorative purposes.

Reports from individual establishments show a marked advance since 1914 in the domestic production of brattice cloth converted from jute fabrics. The cloth converted in 1920 amounted to 3,380,826 square yards, with an estimated value of $899,000.

Imports for consumption under this classification, first enacted in 1913, ranged in the years 1914–1921 from 3,768,108 pounds in 1914 [5] to 1,140,362 pounds in 1918, with a yearly average of 2,092,244 pounds, valued at $258,637. Imports consist for the most part of brattice cloth. Two-thirds of the imports come from the United Kingdom, and British India furnishes the bulk of the remainder.

TABLE 4.—*Imports of processed burlap.*[a]

Fiscal year.	Imports for consumption.		Duty.	Value per unit of quantity.	Equivalent ad valorem rate.
	Quantity.	Value.			
	Pounds.			*Cts. per lb.*	*Per cent.*
1914 [b]	3,768,108	$345,697	$34,569	9.2	10
1915	2,018,540	164,092	16,409	8.1	10
1916	1,840,311	182,025	18,202	9.9	10
1917	1,853,014	217,410	21,741	11.7	10
1918	1,140,362	167,313	16,731	14.7	10
1919	2,193,896	344,803	34,480	15.7	10
1920	1,818,541	345,856	34,585	19.0	10
1921	1,571,657	235,977	23,597	15.0	10
1921 (calendar year)	1,016,418	105,263	.....	10.3	10

[a] Classification first adopted in 1913. [b] From Oct. 4, 1913, to June 30, 1914.

NOTE.—No figures are available regarding total production of cloth imported in the gray, and printed, dyed, etc., in this country. The amount so processed in the United States is many times larger than imports of burlap which has been dyed, etc.

[5] From Oct. 4, 1913, to June 30, 1914.

PART I.

BAGGING FOR COVERING RAW COTTON.

DESCRIPTION AND USES.

Cotton bagging is the coarse jute cloth employed for covering raw cotton. The type used for baling the American cotton crop is the coarsest bagging made and the lowest grade of jute fabric woven. The better grades of bagging are usually plain woven with a double warp thread. The greater part of the bagging consumed in this country, however, has a single warp. The consumption of double warp bagging will be discussed in connection with the trade in burlap.

The importance of the domestic trade in cotton bagging may be judged from the fact that in the season of 1920 the American cotton crop, including linters, totaled 13,863,208 bales, each bale requiring an average of 7 yards of covering.

Cotton bagging is usually woven from yarns produced from the lowest grades of jute butts or cuttings, the woody ends of the stalks cut off when preparing the fiber for shipment.

The bulk of the cotton bagging woven in the United States has about two warp threads and two weft threads per square inch, and weighs about two pounds to the linear yard. In the tariff acts of 1897, 1909, and 1913 imports of cotton bagging under a specific paragraph have been restricted to such covering having not more than 16 threads to the square inch, counting the warp and filling, and weighing not less than 15 ounces to the square yard. The acts of 1897 and 1909 made specific mention of two classes of burlap: (1) not exceeding 30 threads to the square inch, counting the warp and filling, weighing 6 ounces or over per square yard; and (2) not exceeding 55 threads per square inch, counting warp and filling.

There are three grades of bagging woven in the United States. The first is manufactured from jute butts with a small part of waste; the second, from jute butts mixed with 60 or more per cent of other materials, principaly old bagging, and cordage wastes; and the third of practically all old bagging with the addition of a small amount of hard fiber.

These grades are made in various widths and weights. The usual width is 45 inches. There is greater diversity, however, in the matter of weights, which run 2, 2¼, 2½, and 3 pounds to the yard, with 2 pounds to the linear yard as the dominant weight. Various trade names such as "American," "York," "Peerless," "Hub," and "Calcutta" are used to designate the quality and weight of the different classes of bagging.

Six yards of material are used in covering the average bale as it comes from the gin. The bagging is held in place by six ties weighing about 1½ pounds each, making the actual tare amount to about 12 pounds. American mills limit the tare to 24 pounds per compressed bale, whereas European purchasers usually buy on the basis of 4 per cent gross weight.

The production of "compress labels"—patches of greater weight than ordinary bagging, added at the time of compression to equal the purchaser's allowance for tare—forms an important part of the domestic trade in cotton bagging.

About 80 per cent of the American cotton crop is sent north and abroad. Previous to shipment all cotton that is exported, and a very large part of that consumed in the United States, is compressed, which reduces the size of the bale one-half. In order to make up the difference between the actual and estimated tare, it is a common practice for shippers, when rebaling at a compress, to add to each side of the bale a compress label. When the shipment is intended for Europe, the labels weight about 4 pounds each, bringing the total weight of the bagging up to 20 pounds.

The leading weights and sizes of compress labels are:

pounds	30 by 36 inches
½ pounds	30 by 42 inches
6 pounds	36 by 44 inches
pounds	30 by 48 inches
½ pounds	30 by 54 inches

Large amounts of cloth made from secondhand twilled sugar bags are utilized for covering cotton. These bags, which are not manufactured in the United States, measure 29 inches by 48 inches and weigh twice as much per square yard as burlap bags of domestic origin. They enter this country as containers of raw sugar shipped in 320-pound quantities. The leading domestic use of such bags is for sacking vegetables, cottonseed cake, and other bulky commodities. The quantity consumed in a given year for covering cotton depends upon the price offered for their use as sacks. As a rule, only the poorer grades are used for covering purposes.

The use of secondhand bagging is extensive. A number of southern mills sell their secondhand ties and bagging directly to farmers and ginners. After bagging has been used a number of times it becomes so worn that it must be rewoven or mixed with jute butts or cordage wastes to be serviceable any longer for covering purposes. The reweaving is done by first running the material through a special type of picker, which tears it up into its original fibers; next it is recarded, respun, and rewoven.

Domestic Production.

MATERIALS.

Jute is the fiber generally used in the manufacture of cotton bagging. The amount normally consumed of other fibers such as Russian seg, New Zealand tow, Norwegian tow, or of fiber wastes such as cotton tares and mill wastes, is small.

With the exception of cotton, more pounds of jute are produced than of any other fiber. Unlike cotton, however, the production of jute is confined almost exclusively to British India, which levies a duty on all exports of jute and its manufactures.[1] The rate in 1921, on the basis of the rupee being equal to 32.44 cents, amounted to $0.40

[1] No preferential duty on jute is given to countries of the British Empire, though Dundee has been urging it. The views of the English jute trade on this subject are set forth on page 39 of the Report of the Committee to Consider the Position of the Textile Trades after the War—London, 1918.

per bale of 400 pounds of jute butts, and to $1.46 for the same quantity of long jute. On hessian the duty was $9.73 per ton of 2,240 pounds as against $6.49 for the same quantity of sacking.[2]

Jute is ordinarily the world's cheapest fiber. The causes for its low price are: (1) The heavy production per acre; (2) the fact that the production of jute is confined to a part of the world where labor is cheap and abundant; (3) the ease with which the fiber can be prepared for spinning. Although jute is the cheapest fiber, yet it is too expensive to use any but the ends (butts) in the production of cotton bagging.

When being prepared for shipment, the jute fiber is divided into three classes:

1. Jute butts—consumed chiefly in the manufacture of sacking weft, bagging, and paper.

2. Jute rejections—material either damaged or barky or knotty, and therefore unsuitable for manufacture into burlap.

3. Long jute—fiber utilized in spinning the yarns used as the warp and weft in hessian, and as the warp in sacking.

The United States is the world's largest importer of jute butts, which have been free in all acts since 1891. The domestic consumption totaled 29,832 tons in 1920. By 10-year periods, the American consumption has averaged yearly:

	Tons.
1891-1900	64,089
1901-1910	43,790
1911-1920	30,583

A number of different grades of jute butts are imported. "Mixings," the cheapest and the grade used in the manufacture of bagging, represents the bulk of the butts imported. The price of "mixings" per pound landed in New York was 2.5 to 3 cents in January, 1913; 2.75 cents in December, 1913; 1.4 to 1.5 cents in March, 1921; and 2 cents in July, 1921. The greater part of imports is consigned to the two American companies that turn out all but a small part of the bagging produced in the United States.

The lack of tonnage during the closing years of the war created a scarcity of jute butts, which led one of the largest producers of bagging in the United States to develop the desert fiber, yucca, which grows in West Texas and New Mexico. Before the close of the war this company had erected a plant and was extensively using yucca in the manufacture of bagging. At the close of the war, this bagging concern was planning to produce about 40,000 tons of yucca fiber per year. Increases in domestic railroad rates, while the ocean rates from India were being lowered, combined with advances in domestic wages, coal, and other supplies, made the cost of yucca prohibitive as compared with jute butts imported from India.[3] As the result of these conditions, the company was obliged to discontinue the production of yucca.

A number of waste materials, other than those specifically mentioned in the clause relating to cotton bagging, which might be utilized in its manufacture, are free of duty. The last clause of paragraph 408 provides that the waste of bagging, burlap, and similar fabrics suitable for the manufacture of paper shall be ad-

[2] Indian tariff act No. VI of 1917, effective Mar. 1, 1917.
[3] Freight charges from India to ports in the United States are discussed on p. 52.

mitted free of duty. Likewise, paragraph 566 grants free entry for "paper stock * * * rope ends, waste rope, and waste bagging, * * * including old gunny cloth and old gunny bags, used chiefly for paper making."

Secondhand jute bags, twilled or colored, which have become so worn, torn, or cut as to be unsuitable for use as bags, and not classable as rags or paper stock, are dutiable at 10 per cent under paragraph 384 of the act of 1913, as waste not specifically provided for.[4]

ORGANIZATION.

All but 2 or 3 per cent of the new bagging produced in the United States is the output of two companies, which are the world's leading manufacturers of this article. The first of these companies manufactures about twice the quantity produced by the second. Sales by the first company amounted in 1915 to about $9,500,000; in 1916 to $16,000,000; in 1917 to $21,000,000; in 1918 to $24,000,000; in 1919 to $21,000,000; and in 1920 to $23,000,000. This firm started operating in 1911, succeeding a company of the same name, which had begun business in 1890. The second company's gross sales in 1920 amounted to $19,210,000 as compared with $16,146,000 for 1919 and $14,183,000 for 1918. It commenced operating in 1914 as the successor to a company of the same name, incorporated in 1868.

Both companies make fiber products the chief end of their output. The leading products of the first are manila, sisal cordage, and jute and hemp twines; and of the second, jute and hemp twines, and jute carpet yarns.

The first company has five plants located in as many States, namely, St. Louis, Mo.; Charleston, S. C.; Brooklyn, N. Y.; Philadelphia, Pa.; and East St. Louis, Ill. Only the first three mills produce bagging. In recent years, an increasing percentage of this company's total output has come from the mills located at Charleston and St. Louis. In 1920 about three-quarters of its total production was woven in these two mills. The second company has its 11 mills all located at Ludlow, Mass. Only one of these works on cotton bagging.

Likewise, two companies—one located in the South and the other in the North—dominate the trade in sugar bag cloth. Both companies have been engaged in this line for more than 40 years. The southern firm, which specializes in the manufacture of 100-pound granulated sugar bags, concentrates its efforts in the bagging trade to making patches or compress labels from jute butts, from sugar-bag cloth, and from other materials. This company early in 1921 had a capitalization of $2,500,000 and was giving employment to about 150 persons. The firm located in the North, which makes the sale of secondhand raw sugar bags for sacking purposes the leading end of its business, employed in 1920 about 300 people in two plants valued at over $1,000,000.

The trade in rewoven bagging is largely divided among four firms. One of the largest firms specializing in this line was operating in 1921 two plants with a value in excess of $500,000.

[4] McGettrick v. United States, 11 Ct. Cust. Appls. —; T. D. 38727 of 1921.

The operatives employed in these plants consist largely of women. In the carding, spinning, and winding operations they greatly outnumber the men. Two companies have women as weavers or rovers, whereas a third employs only men.

METHODS OF PRODUCTION.

The production of cotton bagging calls for a minimum of textile machinery. The machinery required, in the order of its use, is as follows: Bale breaker; softener; breaker card; finisher card; rotary gill-spinning frame; cop-winding machine; loom; roll-winding machine. For making second-grade bagging, there are also required waste-cleaning machines and dreadnought pickers.

One of the two leading domestic concerns manufacturing bagging makes all its bagging machinery, whereas the second imports a part of that used in the processes prior to weaving. The act of 1913 lowered the duty on jute machinery from 45 to 20 per cent.

PRODUCTION.

The annual cotton yield in the years 1909–1912, and the bagging output of two companies, which were then weaving all the new bagging produced in the United States, are shown in the following table compiled from a report published by the Department of Commerce in 1913:[5]

TABLE 5.—*Production of raw cotton and cotton bagging, 1909–1912.*

Year.	Cotton crop, including linters.	Bagging for covering cotton.		
		Production by American manufacturing company.[1]	Production by Ludlow manufacturing associates.	Total production.
	500-lb. bales.	*Linear yards.*	*Linear yards.*	*Linear yards.*
1909	10,315,382	50,638,665	16,861,155	67,499,820
1910	12,005,688	36,314,359	21,270,475	57,584,834
1911	16,250,276	[2] 47,875,735	18,310,760	66,186,495
1912	14,313,015	[2] 31,856,450	20,879,180	52,735,630

[1] Contains small amounts of bagging which were purchased.
[2] Includes production of compressed labels and cut pieces, which have been reduced to running yards on the basis of 3.6 pounds to the yard.

In the years 1914–1920 the average yearly production of bagging was below the prewar output. The production of the largest company in these years ranged between 52,052,455 and 28,258,728 running yards; of the second, between 22,000,000 and 16,000,000 running yards, and of a third company, which began manufacturing new patches in 1916, between 4,368,000 pounds and 3,183,000 pounds.

The decline was confined to the last part of the period. Following the record cotton crops of 14,795,367 bales in 1913 and 16,991,830 bales in 1914, the output of bagging expanded in anticipation of continued large yields. The subsequent decline in the years 1916–1918 was due to: (1) A falling off in the cotton crop from the high levels reached in 1911–1914; (2) the difficulty during the war in securing raw materials; (3) the increased consumption during 1917–1920 of secondhand bagging, sugar-bag cloth, and rewoven bagging.

[5] "Cotton Bagging and Ties."—Department of Commerce, 1913, pp. 20 and 27.

At the close of the war production tended to become normal in its relation to the cotton crop. The amount of new bagging, including new patches, woven in 1919 is estimated at 56,510,000 linear yards of 45 inches, or about 4.7 yards of new material for each of the 12,020,000 bales grown,[6] the same ratio as in 1910, when the cotton crop was 12,005,000 bales and 57,584,000 yards of bagging were produced. Production in 1920 did not expand with the increased crop of that season. New bagging and patches woven in 1920 amounted to about 52,686,000 yards. The cotton crop of 1920 amounted, in equivalent 500-pound bales, to 13,439,603 bales of lint cotton and 423,605 bales of linters, a total of 13,863,208 bales. Assuming that 7 yards of bagging to the bale, 97,042,456 yards of material were required for covering the 1920 crop.

Manufacturers report that the bulk of their output consists of lower grades in response to the demand, which places more emphasis on the bagging being cheap and heavy than on its being durable. The increasing proportion of bagging made from rewoven fibers and mill wastes is shown by the marked decline during the years 1891–1920 in imports of jute butts.

CONSUMPTION.

Table 6 furnishes a basis for estimating the amount of bagging consumed during the period 1900–1920. Six yards of material are customarily used for wrapping the bale as it comes from the gin. About four-fifths of the cotton grown in the South is shipped North and to Europe. An allowance of an additional yard may be made for covering sample holes and for compress labels, making an average of 7 yards used in wrapping the ordinary cotton bale.

TABLE 6.—*Production of raw cotton, including linters, 1900–1920.*[1]

Year.	Bales (500-pound).	Year.	Bales (500-pound).
1900	10,266,527	1915	12,122,961
1905	10,804,556	1916	12,780,644
1910	12,005,688	1917	12,428,094
1911	16,250,276	1918	12,970,048
1912	14,313,015	1919	12,028,732
1913	14,795,367	1920	13,863,208
1914	16,991,830		

[1] Figures for 1900–1919 are from "Cotton Production and Distribution, 1919–1920": Department of Commerce, Bulletin No. 145, p. 13. Statistics relating to the cotton crop of 1920, exclusive of linters, are given in "Cotton production in the United States, Crop of 1920," published by the Bureau of the Census, June 16, 1921.

In recent years a smaller amount of new bagging has been used in covering the average cotton bale. In the period 1909–1912 the proportion was about 5.43 yards of new material to 1.57 yards of second-hand bagging, rewoven bagging, and sugar-bag cloth.[7] Since 1914

[6] Census figures give the domestic production of bagging in 1919 as 75,205,000 square yards, valued at $11,340,000. These totals relate only to amounts of bagging woven and do not differentiate between material made from new fibers and that from rewoven fibers.

[7] "Cotton Bagging and Ties," pp. 36, 37.

there has been a marked increase in the consumption of secondhand bagging and substitutes. Reports from two prominent dealers in sugar-bag cloth show a decided advance in their sales during 1917–1920 of such covering and patches as compared with the first years of the war. The quantities sold by each in 1920 were below the totals of the preceding two years, because fewer bags than usual were available for covering purposes. The greater demand and the higher prices obtainable for bags of every description made it more profitable to patch these for sacking commodities than to cut them up for use as bagging. The amounts of bagging rewoven by one of the largest companies specializing in that line was from 25 to 37½ per cent greater in the years 1918–1920 than in 1914.

To ascertain the proportion of total cloth used in 1919 and 1920 for covering cotton consisting of (1) new bagging, (2) rewoven bagging, (3) sugar-bag cloth, and (4) secondhand bagging, the Commission obtained reports from the leading firms in each group, giving its production and sales of each type for each of these years. The season for selling bagging is practically limited to the period April-November, making sales within the calendar year coincide to a large extent with the amounts used in covering the crop of a given year. Sales of new bagging and patches, as based on the reports of these firms, and on the best estimates obtainable, were about 51,427,000 linear yards in 1919 and about 46,869,000 linear yards for 1920. The cotton crops, including linters, in these years amounted to 12,028,732 bales and 13,863,208 bales, respectively. Assuming that 7 yards of bagging were used in covering the average bale, 84,201,112 yards of material were required for the 1919 crop and 97,042,456 yards for the 1920 crop. Reckoning that all the bagging imported in the calendar years 1919 and 1920 was new and used on the crops of those years, a total of 58,026,616 linear yards of new material was consumed in 1919, and of 52,315,428 in 1920. As compared with an average of 5.43 yards of new bagging for each bale of cotton grown in the years 1909–1912, 4.8 yards were used in 1919 and 3.8 yards in 1920.

A table, based on sales in 1919 and 1920, showing the relative consumption of new bagging, imported bagging, and substitutes, when compared with a similar table published in 1913 by the Department of Commerce, indicates that the only marked change in 1919 from prewar years was an increase from 2 to 14 per cent in the consumption of sugar-bag cloth, cutting down the amounts of new and secondhand bagging used in that year. The figures for 1920, however, show a decided variance. Only in the case of rewoven bagging was the amount and percentage the same. Notwithstanding a larger cotton crop than the year previous, the quantity of new bagging, imported bagging, and sugar-bag cloth declined. Secondhand bagging in 1920 accounted for 28 per cent of all the material used.

TABLE 7.—*Estimated* [1] *consumption of various types of cotton bagging in 1909–1912, 1919, and 1920.*

	Amounts sold, in running yards.			Per cent of total sold in—		
	1909–1912	1919	1920	1909–1912	1919	1920
New bagging	254,398,354	51,427,000	46,869,000	69	61.07	48.29
Imported bagging	32,906,574	[2] 6,599,616	5,446,428	9	7.83	5.61
Rewoven bagging	24,000,000	8,065,000	7,396,000	7	9.57	7.62
Sugar-bag cloth	7,000,000	12,056,000	9,706,000	2	14.31	10.00
Secondhand bagging	50,000,000	6,053,496	27,625,028	13	7.22	28.48
Total consumption	368,304,928	84,201,112	97,042,456	100	100.00	100.00

[1] Based on actual sales and imports amounting in 1919 to 59,079,476 linear yards and in 1920 to 51,903,727 linear yards.

[2] Imports for the calendar years 1919 and 1920 amounted to 8,799,488 square yards and 7,261,904 square yards, respectively. These totals have been converted into linear yards of 45 inches in width, as have all figures in this column.

EXPORTS.

The type of cotton bagging woven in the United States for baling cotton is peculiarly American, since its use is limited to the domestic crop. American cotton is the poorest baled in the world. The demand places the emphasis on bagging that is cheap and heavy rather than on a fabric strong enough to withstand the action of hooks when being handled, or of mesh fine enough to protect the cotton from the action of the elements.

"That the cotton received from the United States at European ports usually is in much worse condition than that received from other countries, as stated by numerous consuls and special agents of the Department of Commerce and Labor, is verified by the photographs of actual shipments. One reason may be, as foreign importers complain, that since they are largely dependent on cotton from the United States, and the producers in the United States know this fact, the latter are indifferent in the manner in which it is packed. But this does not prevent the loss really coming back on the producer."[8]

FOREIGN PRODUCTION.

Statistics of foreign Governments do not show exports of cotton bagging apart from other jute cloths. As compared with shipments of burlap and sacking bags, those of cotton bagging are very small.

UNITED KINGDOM.

The leading English mills manufacturing cotton bagging are reported to be William Cleghorn (Ltd.), of Dundee, and Peter Marsh & Sons, of Liverpool. Production by these firms is occasional. Shipments of bagging from Dundee to the United States in the calendar years 1919 and 1920 amounted to 199,999 and 944,625 square yards, respectively.

[8] "Packing for Export." No. 4. Miscellaneous Series, Department of Commerce and Labor, 1909. This report contains a number of photographs showing shipments from various countries at arrival upon destination. A more recent discussion of this subject is to be found in a paper on "Needed Reforms in the Ginning, Baling, and Compressing of Cotton," read before the Second World Cotton Conference at Manchester, England, June 21, 1921.

A number of American bagging concerns import secondhand bagging from the United Kingdom for the purpose of making it into yarn. One of the firms in the South, reweaving bagging, reports that it consumes annually from fifteen to twenty million pounds of secondhand gunny bagging, a part of which is purchased from mills located in Manchester, England.

The United Kingdom consumes about one-fifth of all the cotton grown in the world, ranking second to the United States. About two-fifths of American exports are consigned to the United Kingdom. Shipments to the United States form an outlet for surplus secondhand bagging.

BRITISH INDIA.

The production of cotton bagging in India has never been large. With one exception all the Indian mills that have woven any cotton bagging in the past have produced it as incidental to their manufacture of burlap and sacking. Before the war there were five Indian mills that wove bagging. An American importer estimates their annual production as follows:

TABLE 8.—*Indian jute mills manufacturing cotton bagging.*

Name of mill.	Estimated annual production of cotton bagging shortly before 1914.	Name of mill.	Estimated annual production of cotton bagging shortly before 1914.
	Linear yards.		*Linear yards.*
Alliance	2,000,000	Lansdowne	2,000,000
Hastings	2,000,000	Narcoldanga	2,000,000
Kinnison	500,000		

The last, Narcoldanga, produces bagging exclusively. On January 1, 1921, this mill had 14 sacking looms.[9]

The representative of a domestic bagging company, who visited India in 1920, reports only two mills manufacturing bagging, namely, Lansdowne and Narcoldanga, the former an up-to-date and efficient concern preparing to double its plant.

The practice in Calcutta is to manufacture on order and not to carry stock, as in the United States.

India's production of gunny cloth for covering cotton is not limited to supplying the demand of the United States. As a grower of this commodity India ranks second, furnishing, in 1919, 22.4 per cent of the world's consumption.[10] Raw cotton is India's leading export. An examination of India's trade returns for the 30 years previous to 1920 shows that on 18 occasions India's chief exports were raw and manufactured cotton, principally raw.

IMPORTS.

Annual imports of cotton bagging for consumption during the period 1892[11]–1921 were greatest in the decade 1901–1910.

[9] Indian jute mills and their looms as of Jan. 1, 1921, pp. 41, 42.
[10] Cotton Production and Distribution, Season of 1919-20; Department of Commerce, Bulletin, 145, p. 79.
[11] 1892 is the first full year for which imports of cotton bagging, on the basis of square yards, are available.

TABLE 9.—*Imports of cotton bagging into the United States, 1892–1921.*

Period, fiscal year.	Average annual quantity.	Average annual value.	Period, fiscal year.	Average annual quantity.	Average annual value.
	Square yards.			*Square yards.*	
1892–1900	4,055,414	$152,715	1911–1920	7,196,310	$542,952
1901–1910	11,162,067	566,409	1921	4,873,711	511,766

In the decade 1901–1910 the domestic production of cotton, including linters, advanced about 27 per cent, or from an average of 9,102,000 bales during the years 1892–1900 to 11,591,000 for the following 10 years.

In the period 1892–1920 imports of bagging were smallest in 1894, with 618,708 square yards, valued at $32,709, and greatest in 1907, with 19,817,860 square yards, valued at $1,215,446.

Imports showed the greatest advance in quantity during the years 1903–1907, when they increased steadily year by year from 5,417,039 square yards to the peak reached in 1907. Accompanying this rapid advance was a decline in the equivalent ad valorem duty from 15.26 to 9.78 per cent. Under the act of 1913 bagging was exempt from duty.

The war seriously interfered with shipments of bagging. From a total of 9,648,484 square yards in the fiscal year 1915 they fell to 1,781,889 square yards in 1918.

Since 1918 imports have tended to remain at the level of war years. From 2,912,524 square yards in the fiscal year 1919 shipments advanced to 9,332,239 square yards in 1920, but fell to 4,873,711 square yards during the fiscal year ending June 30, 1921.

IMPORTS BY COUNTRIES.

Since the close of the war British East India has supplied the United States with the greater part of its foreign bagging—in the fiscal year 1919, 67.81 per cent; in 1920, 80.99 per cent; and in 1921, 56.71 per cent. Imports from the United Kingdom, which supplies all but a small part of the remainder, were 32.55, 17.55, and 37.49 per cent, respectively, for those years.

This is in striking contrast to the previous quarter of a century, when bagging of English manufacture constituted by far the greater part of the domestic consumption. From 1895 to 1918[12] in two years only—1898 and 1902—did the value of shipments from India exceed those from the United Kingdom. By five-year periods since 1895 imports from the United Kingdom have ranged between 60 and 80 per cent of the total value as against 39 and 19 per cent from British India.

Indian bagging is superior to that made by the English; it is made entirely from jute butts, is woven with more threads to the square inch, and is in every way stronger and more suitable for covering cotton. Calcutta bagging finds its greatest use in the Mississippi Delta, where the best grades of American upland cotton are grown and where the demand is for the best covering available.

[12] The value of bagging received from foreign countries is first separately recorded from bags in 1895.

Imports of cotton bagging from the United Kingdom fall into three classes: 1. New bagging; 2 second-hand bagging; and (3) old bagging suitable only for remanufacture. The English product for the most part is made from a combination of worn bagging and low grades of mill waste.

With her exceptional advantages in the way of raw materials and labor, Calcutta is able to export bagging at a lower figure than Dundee. During the years 1912–1921 the average export prices per square yard of English and Indian bagging were as follows:

TABLE 10.—*Prices per square yard of imported cotton bagging, 1912–1921.*[1]

Fiscal year.	United Kingdom.	British India.	Fiscal year.	United Kingdom.	British India.
	Cents.	*Cents.*		*Cents.*	*Cents.*
1912	6.9	5	1917	10.6	7.4
1913	8.7	5.7	1918	13.3	11.9
1914	7.9	5.2	1919	14.6	11.3
1915	8.1	5.7	1920	13.3	9.4
1916	9.5	6.1	1921	13.2	8.4

Prices of domestic and imported bagging are found on pp. 28–30.

India in the past has not supplied all of our imported bagging, because in contrast to her major lines, burlap, and sacking bags, the American trade in bagging is small and attended with certain risks.[13]

COMPETITIVE CONDITIONS.

Imported bagging constitutes a small part of the material consumed annually in the United States for covering cotton. In the years 1892–1920, the domestic production of raw cotton, including linters, averaged 11,597,000 bales yearly. Allowing 7 yards of material for each bale, 81,179,000 yards of bagging were necessary to cover the American crop; during this period imports averaged 7,728,000 square yards, or 5,796,000 yards of 45-inch material.

The American production of raw cotton and linters during the season 1920 amounted to 13,863,000 bales, requiring about 97,000,000 yards of bagging. Imports of bagging in the twelve months ended December 30, 1920, totaled, 7,261,904 square yards—5,446,000 running yards—or about 6 per cent of all the bagging used for the 1920 crop.[14]

Import statistics are not separately classified to show: (1) New bagging; (2) second-hand bagging, or (3) old bagging that is to serve as raw material for new bagging or is to be rewoven. It is estimated that at least a fourth of the covering material imported in 1920 consisted of bagging, which was subsequently rewoven or mixed with other fibers in the manufacture of new bagging.

Two factors combine to make the volume of imports small—(1) the strong position of the American concerns manufacturing this product, and (2) the risks involved in supplying a demand which fluctuates from year to year.

[13] This subject is treated at greater length on pp. 43, 44.
[14] During the calendar year, 1921, imports were 3,372,000 square yards, valued at $309,397.

The two domestic concerns are the world's largest manufacturers of bagging. Each has a strong and large organization, has been long prominent in this field, and makes a number of products closely allied to bagging, thus saving in overhead expenses.

The import trade is attended with certain risks. The demand for bagging fluctuates from season to season, as it depends upon the size of the crop. Likewise the demand is confined to the period, April–November. Whatever bagging is not sold during this period must be stored until the following season. These factors, together with the uncertainty of bagging remaining on the free list, or being subject to a low rate of duty, have militated against foreign manufacturers concentrating on the production of bagging and against their buying additional machinery.

These considerations have had more influence in limiting imports from Dundee than from India. Calcutta's lack of interest has been due to the small size of the orders involved and the low value of the product, which have offered little incentive to turn from the production of burlap and sacking bags, in which lines the world's consumption up to 1914 was advancing more rapidly than the output.

There is, however, a possibility of India furnishing in the near future a larger part of the American consumption. The first of the two concerns which dominate the domestic trade in bagging, and a subsidiary of the second, are now each building a mill in India for the manufacture of this material. Both companies have already shipped abroad a part of the bagging machinery formerly operated in this country. The subsidiary of the second company was incorporated in 1920 with $5,000,000 capital stock for the purpose of taking over and extending the business of the parent company in India. This subsidiary will also produce burlap.

In the past, although burlap has been subject to a duty which, in the years 1898–1913, ranged between 21 and 30 per cent, over 99 per cent of the domestic consumption was supplied by British India and the United Kingdom. In the fiscal year 1921, the domestic consumption of burlap was about 1,000,000,000 yards, of which about 93 per cent came from India.

The advantages India possesses for the manufacture of jute cloths, and which are responsible for the leading American bagging firms building mills there, will be discussed later.[15]

TARIFF HISTORY.

A study of the paragraphs relating to cotton bagging in tariff acts since 1824, when it was first mentioned, discloses:

(1) That cotton bagging has been assessed at a specific duty in all acts with the exception of those passed in 1846, when it was made dutiable at 20 per cent, and in 1894, and 1913, when it was made free.

(2) That jute has become the leading material used in its manufacture, supplanting flax and hemp.

(3) That in the earlier acts, where the duty was laid on the basis of value per yard, the basis tended to become lower.

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[15] See pp. 52–54.

The paragraph relating to cotton bagging in the act of 1824 reads as follows:

> On cotton bagging, 3 cents and three-fourths of a cent per square yard.

The first reference to bagging made from jute appears in the act of 1861:

> On cotton bagging or any other manufacture not otherwise provided for, suitable for the uses to which cotton bagging is applied, whether composed in whole or part of hemp, jute, or flax, or any other material, valued at less than 10 cents per square yard, 1½ cents per pound; over 10 cents per square yard, 2 cents per pound.

In 1862, the duty was lowered to three-quarters of a cent per pound on material valued at less than 10 cents per square yard, and to 1 cent on that over 10 cents.

In the act of 1864 gunny cloth, gunny bags, and cotton bagging were assessed at 3 cents per pound, when the value was 10 cents or less per square yard, and at 4 cents when the value was in excess of 10 cents. These products were dutiable in the acts of 1870 and 1883 at 2 cents and 1½ cents, respectively, per pound when valued at 7 cents or less per square yard; and when valued at over 7 cents per square yard at 3 cents in 1870 and at 2 cents in 1883.

In 1890 jute butts were added to the list of materials, from which the cotton bagging might be made. In that act "Bagging for cotton, gunny cloth, and all similar material suitable for covering cotton," if valued at 6 cents or less per square yard, was assessed at 1.6 cents per square yard; and if valued at more than 6 cents per square yard, at 1.8 cents.

The act of 1894 used the same phraseology as the act of 1890, but placed the article on the free list.

The classification adopted in the act of 1897 was a radical departure from former classifications. Paragraph 344 of that act reads as follows:

> Bagging for cotton, gunny cloth, and similar fabrics, suitable for covering cotton composed of single yarns made of jute, jute butts, or hemp, not bleached, dyed, colored, stained, painted, or printed, not exceeding 16 threads to the square inch, counting the warp and filling, and weighing not less than 15 ounces per square yard, six-tenths of 1 cent per square yard.

This paragraph was reenacted without change of wording or duty in the act of 1909, and was made a basis of the classification adopted in 1913. The act of 1913 made cotton bagging free of duty, and while eliminating hemp, which is a soft fiber, from the list of materials from which cotton bagging might be made, added cotton tares and a number of new fibers: Seg, Russian seg, New Zealand tow, Norwegian tow, and aloe.

BAGGING AND COVERING COTTON.

TABLE 11.—*Imports by countries, 1895–1921.*[1]

Fiscal year.	Imported from—				All other countries.	
	United Kingdom.		British East India.			
	Square yards.[2]	Value.	Square yards.[2]	Value.	Square yards.[2]	Value.
1895		$28,603		$1,846		$41
1896		57,843		9,982		34
1897		351,552		42,542		315
1898		217,582		252,279		4,660
1899		426,160		88,728		3,127
1900		228,457		89,960		
1901		371,756		104,297		
1902		219,566		415,884		2,398
1903		152,688		69,277		
1904		189,942		73,724		14
1905		275,696		72,305		55
1906		556,200		61,825		1,775
1907		1,076,207		131,560		10,579
1908		821,992		232,983		13,122
1909		225,877		225,828		
1910		456,782		248,093		57
1911		438,551		156,694		87
1912	4,911,055	339,455	971,255	49,430	6,816	533
1913	5,106,073	414,475	2,709,421	137,514		
1914	9,201,009	723,284	4,847,994	254,720	465,990	18,597
1915	6,215,717	495,927	3,500,979	220,828	96,531	3,725
1916	1,976,285	188,034	380,447	28,230	222,425	5,676
1917	3,478,774	369,019	20,000	2,202		
1918	1,502,708	200,294			270,009	12,299
1919	936,428	136,923	1,975,110	222,538	986	110
1920	1,638,120	218,411	7,557,923	707,757	136,196	13,092
1921	1,827,523	242,513	2,764,107	232,411	282,081	35,842

[1] Imports of cotton bagging by countries were included prior to 1895 in the classification of "bags and bagging."
[2] Quantities of cotton bagging imported by countries are first given, beginning with 1912.

TABLE 12.—*Imports for consumption—Revenue, under tariff acts 1890, 1894, 1897, 1909, and 1913.*

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Square yards.			*Cents.*	*Per cent.*
1891[1]	1.6 and 1.8 cents per square yard.	233,976	$10,669	$3,744	4.6	35.09
1892	do	1,369,533	66,964	22,024	4.9	32.89
1893	do	801,741	40,813	12,971	5.1	31.78
1894	do	613,708	32,709	10,003	5.3	30.58
1895	do	50,408	2,497	807	5.0	
Average yearly imports under act of 1890.		789,130	39,735	12,775	5.0	32.11
1895[2]	Free	622,309	30,650		4.9	
1896	do	1,694,508	70,191		4.1	
1897	do	9,491,777	394,038		4.2	
1898	do	642,384	24,438		3.8	
Average yearly imports under act of 1894.		4,279,260	178,485		4.2	

[1] Quantities by square yards available, beginning with Oct. 6, 1890.
[2] From Aug. 28, 1894, to June 30, 1895.

BAGGING FOR COVERING COTTON—continued.

TABLE 12.—*Imports for consumption—Revenue, under tariff acts 1890, 1894, 1897, 1909, and 1913*—Continued.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Square yards.			*Cents.*	*Per cent.*
1898 [a]	0.6 cent per square yard.	5,262,788	$193,524	$31,577	3.5	17.21
1899	do	12,763,285	386,109	76,780	3.0	19.82
1900	do	7,236,606	295,211	43,420	4.1	14.71
1901	do	9,161,996	432,785	54,972	4.7	12.70
1902	do	6,641,803	296,454	39,851	4.5	13.44
1903	do	5,417,039	213,098	32,502	3.9	15.26
1904	do	7,801,672	261,235	46,810	3.3	17.92
1905	do	9,603,487	391,730	57,621	4.1	14.71
1906	do	12,309,137	663,843	73,855	5.4	11.13
1907	do	19,817,860	1,215,446	118,907	6.1	9.78
1908	do	16,349,696	1,076,354	98,098	6.0	9.11
1909	do	8,012,434	413,209	48,075	5.2	11.63
1910	do	16,505,542	699,940	99,033	4.2	14.15
1911	do	13,365,349	623,099	80,192	4.7	12.87
1912	do	5,778,731	363,751	34,672	6.3	9.53
1913	do	5,483,595	431,164	32,902	7.9	7.63
1914	do	7,619,472	491,652	45,716	6.5	9.30
Average yearly imports under acts of 1897 and 1909.		10,438,270	520,855	62,415	5.0	11.98
1914 [b]	Free	9,944,396	672,494		6.8	
1915	do	9,648,484	720,207		7.4	
1916	do	2,612,567	222,416		8.5	
1917	do	3,483,154	368,920		10.5	
1918	do	1,781,889	236,988		13.2	
1919	do	2,913,224	359,571		12.3	
1920	do	9,332,239	939,260		10.1	
1921 [c]	do	4,873,711	511,766		10.5	
Average yearly imports under act of 1913.		5,757,145	520,490		9.04	
Average yearly imports 1890–1921.		7,454,395	427,415	34,555	5.73	8.08

[a] From July 25, 1897, to June 30, 1898.
[b] From Oct. 4, 1913, to June 30, 1914.
[c] Imports during the calendar year 1921 were 3,372,000 square yards, valued at $309,897.

TABLE 13.—*Prices of new domestic bagging, 1898–1921.*

(Wholesale price per linear yard of first-grade, 2-pound bagging.)

a. Data from American Manufacturing Co., Brooklyn, N. Y.

Year.	Average selling price May 1, f. o. b. New York.	Year.	Average selling Price May 1, f. o. b. New York.	Year.	Average selling price May 1, f. o. b. New York.	Year.	Average selling price May 1, f. o. b. New York.
	Cents.		*Cents.*		*Cents.*		*Cents.*
1898	5.375	1902	8.625	1906	8.375	1910	7.50
1899	5.50	1903	8.375	1907	9.50	1911	8.00
1900	7.375	1904	6.25	1908	6.625	1912	8.50
1901	6.00	1905	7.50	1909	5.875	1913	10.50

BAGGING FOR COVERING COTTON—continued.

TABLE 13.—*Prices of new domestic bagging, 1898–1921*—Continued.

(Wholesale price per linear yard of first grade, 2-pound bagging.)

Year.	Prices f. o. b. Atlantic coast and St. Louis.		Year.	Prices f. o. b. Atlantic coast and St. Louis.	
	Lowest.	Highest.		Lowest.	Highest.
	Cents.	*Cents.*		*Cents.*	*Cents.*
1914	5.75	8.375	1918	13	16.00
1915	6.25	8.50	1919	16.50	17.50
1916	8.50	12.00	1920	10.50	18.50
1917	11	13.00	1921	7.50	10.00

b. Data from Ludlow Manufacturing Associates, Ludlow, Mass.

Year.	Lowest.	Highest.	Year.	Lowest.	Highest.	Year.	Lowest.	Highest.
	Cents.	*Cents.*		*Cents.*	*Cents.*		*Cents.*	*Cents.*
1900	7⅞	8½	1908	6⅞	7⅛	1916	11⅞	12½
1901	6½	6⅞	1909	6	6½	1917	13	14½
1902	5⅞	6⅜	1910	7½	7 1/16	1918	13⅝	16⅝
1903	5½	6 1/16	1911	8	8 1/16	1919	17⅛	19⅝
1904	6 1/16	7⅛	1912	8½	8 1/16	1920	18⅞	19⅝
1905	7⅛	8½	1913	10½		1921	8⅝	9⅜
1906	8⅝	9⅜	1914	[1] 8¼	8¼			
1907	9¼	10¼	1915	8¼	8½			

[1] From 1914, all prices are for delivery at Savannah.

TABLE 14.—*Prices of imported bagging, 1914–1921.*

(Wholesale price per linear yard of first grade, 2-pound bagging.)

Data from C. Lee McMillan & Co. (Ltd.), New Orleans, La.

Year.	Best quality Calcutta.		Other foreign bagging, quality about equal to first grade domestic.		Year.	Best quality Calcutta.		Other foreign bagging, quality about equal to first grade domestic.	
	Lowest.	Highest.	Lowest.	Highest.		Lowest.	Highest.	Lowest.	Highest.
	Cents.	*Cents.*	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*	*Cents.*
1914	8¼	10 1/16	5⅜	9	1918	.....	.....	14	17
1915	7½	10 1/16	5½	8½	1919	18¾	21	.....	.....
1916	13½	15	8½	12½	1920	18	20½	.....	.....
1917	13½	15½	13⅜	14	1921	10	10¼	9½	9½

[1] April, 1921, nominal price.

TABLE 15.—*Prices of domestic rewoven bagging and sugar-bag cloth, 1914–1921.*

(Wholesale price per linear yard.)

Data for rewoven bagging from Carolina Bagging Co., Henderson, N. C.; for sugar-bag cloth from Young & Metzner, Long Island City, N. Y.

Year.	Rewoven in southern mill.		Average price of sugar-bag cloth sewn in northern mill.	Year.	Rewoven in southern mill.		Average price of sugar-bag cloth sewn in northern mill.
	Lowest.	Highest.			Lowest.	Highest.	
	Cents.	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*
1914	5	8	8½	1918	12	15½	13½
1915	5½	8	8	1919	15	16½	10½
1916	8	11½	10	1920	10	17	13½
1917	10½	12	10	1921	6½	8	5½

BAGGING FOR COVERING COTTON—continued.

TABLE 16.—*Prices of domestic patches for covering cotton, 1916–1921.*

[Wholesale price per pound.]

Data from Mente & Co., New Orleans, La.

Year.	First grade new jute patches.		Sugar bag patches.		Patches of other materials.	
	Lowest.	Highest.	Lowest.	Highest.	Lowest.	Highest.
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
1916	4.60	5.43	4.35	5.00	2.50	4.80
1917	4.75	6.00	4.55	5.30	2.50	5.10
1918	6.00	8.50	5.50	8.00	3.25	8.00
1919	7.10	8.50	6.70	8.10	4.00	8.00
1920	7.75	8.50	7.50	8.25	5.00	8.25
1921	4.00	6.33	3.65	6.00	2.75	2.82

Rates of duty—cotton bagging—1883–1913.

Act of—	Paragraph.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	343	Bagging for cotton, or other manufactures, not specially enumerated or provided for in this act, suitable to the uses for which cotton bagging is applied, composed in whole or in part of hemp, jute, jute butts, flax, gunny bags, gunny cloth, or other material, and valued at 7 cents or less per square yard.	1¼ cents per pound.
		Valued at over 7 cents per square yard	2 cents per pound.
1890	366	Bagging for cotton, gunny cloth, and all similar material suitable for covering cotton, composed in whole or in part of hemp, flax, jute, or jute butts, valued at 6 cents or less per square yard.	1.6 cents per square yard.
		Valued at more than 6 cents per square yard	1.8 cents per square yard.
1894	392½	Bagging for cotton, gunny cloth, and all similar material suitable for covering cotton, composed in whole or in part of hemp, flax, jute, or jute butts.	Free.
1897	344	Bagging for cotton, gunny cloth, and similar fabrics, suitable for covering cotton, composed of single yarns made of jute, jute butts, or hemp, not bleached, dyed, colored, stained, painted, or printed, not exceeding 10 threads to the square inch, counting the warp and filling, and weighing not less than 15 ounces per square yard.	Six-tenths of 1 cent per square yard.
1909	355	.....do.....	Do.
1913	408	Bagging for cotton, gunny cloth, and similar fabrics, suitable for covering cotton, composed of single yarns made of jute, jute butts, seg, Russian seg, New Zealand tow, Norwegian tow, aloe, mill waste, cotton tares, or other material not bleached, dyed, colored, stained, painted, or printed, not exceeding 10 threads to the square inch, counting the warp and filling, and weighing not less than 15 ounces per square yard * * *.	Free.

COURT AND TREASURY DECISIONS.

Pieces of old bagging extensively *used as patchings for cotton bales,* and *bagging as removed from bales*, which might be used as covering or patches for cotton bales, *and jute bagging*, consisting of pieces of old bagging and of sugar bags, cut and torn, classified as waste, at 10 per centum ad valorem under paragraph 479 of the act of 1909 (T. D. 31776, of 1911), were held to be exempt from duty under paragraph 408 of the act of 1913, inasmuch as new bagging for cotton, gunny cloth, and similar fabrics suitable for covering cotton are free thereunder. (T. D. 34207, of 1914.)

* * * *Patches for cotton bales* composed of *single jute yarn* having the word "Paton" stenciled thereon for the purpose of identification

were held to be exempt from duty as bagging for cotton not printed under paragraph 408 and not dutiable as a manufacture of vegetable fiber under paragraph 284, of the act of 1913. (Abstract 40726, of 1917.)

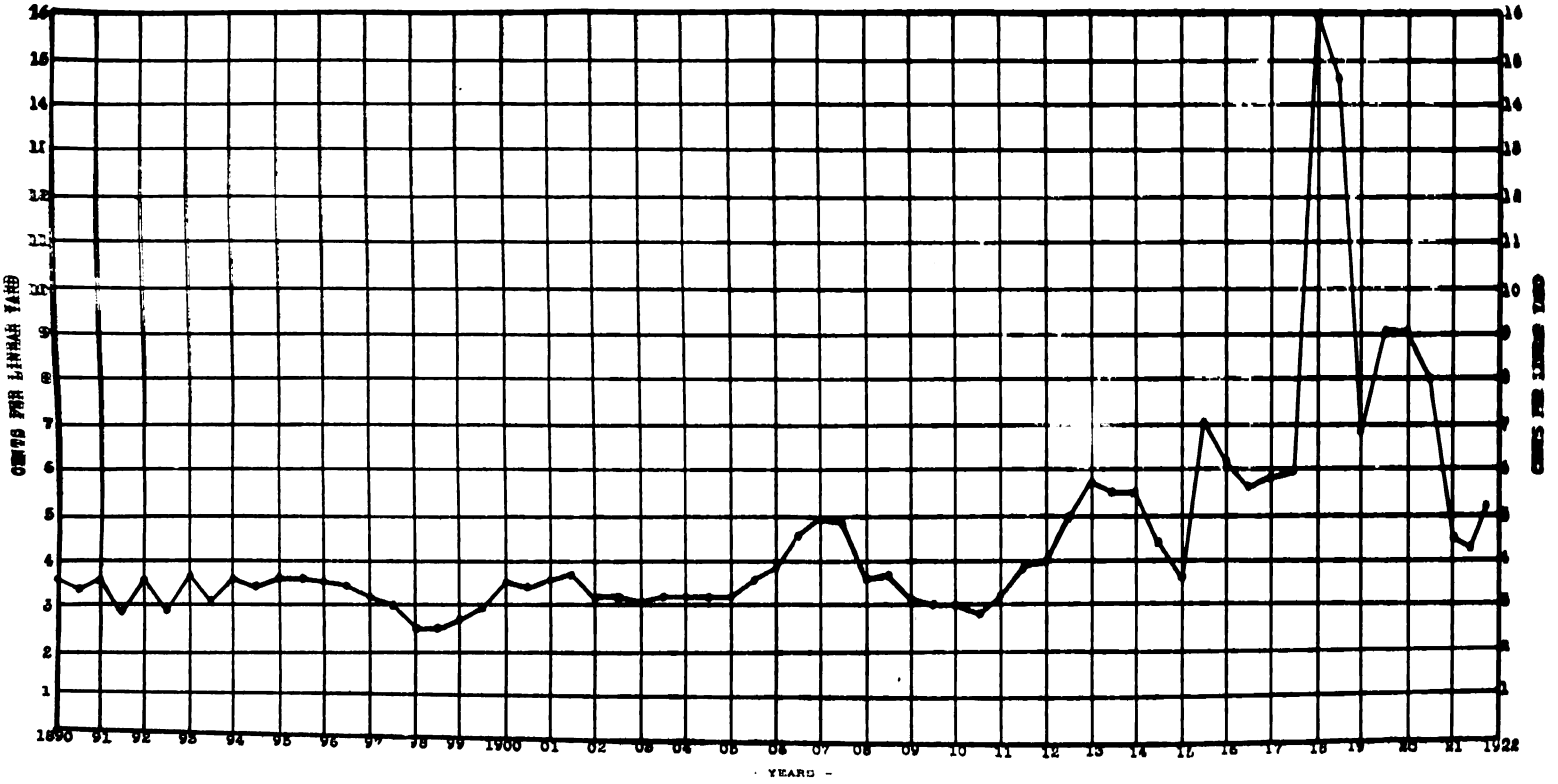
Jute bagging patches, striped and twilled, and not composed of single yarns were held dutiable under paragraph 284 of the act of 1913. (Abstract 39855, of 1916.) . G. A. 8374, T. D. 38506, of 1920. *Cotton patches, whether twill woven or colored, or whether made from plain woven fabrics of single jute yarns,* not colored, were held dutiable under paragraph 384 of the act of 1913, as waste not specially provided for. (G. A. 8374, T. D. 38506, of 1920; modified by McGettrick *v.* United States, 11 Ct. Cust. Appls., of 1921; T. D. 38727.)

Worn bags which have become unavailable for use as bags have not necessarily become unavailable for use as fabrics. Bags which are simply cut down one side and through both ends are no longer bags, but they are still fabrics. If the material is so worn as to be no better than rags, fragments, or shreds, and is not such as is chiefly used for paper making, it is free of duty under paragraph 586, tariff act of 1913, as rags, "not otherwise specially provided for * * *." If it is commercially and chiefly used as paper stock, it is free of duty as such under paragraph 566. If it is no longer commercially suitable for any textile purpose and is not specially provided for as rags or paper stock or under some other more specific designation, it may be classed as a waste under paragraph 384. If it is still a fabric and is "plain woven * * * of single jute yarns * * * not bleached, dyed, colored, stained, printed, or rendered noninflammable * * *," it must be classified as such under paragraph 408. (McGettrick *v.* United States, 11 Ct. Cust. Appls., —; T. D. 38727, of 1921, modifying T. D. 38506, of 1920.)

Secondhand jute sugar bags, twill woven and printed, apparently of whole and sound fabric, with the exception that some of them are sticky with sugar, but which the appraiser reports can be used as containers and which bags are indiscriminately mixed, were held dutiable under paragraph 284, tariff act of 1913 as manufactures of vegetable fiber and not under paragraph 384, or free under paragraph 566. (G. A. 8397; T. D. 38572, of 1920; affirmed in Downing *v.* United States, 11 Ct. Cust. Appls. —; T. D. 38730.)

Chart B—Price 40-inch 10½-ounce Burlap at time of Export from Calcutta, 1890-1921

(*Source:* Prices as of January and July, 1890-1919, and of January, 1920, from "Prices and Wages," Department of Statistics, India. From July, 1920, prices from "Dundee Prices Current." Rupee=32.44 cents.)



PART II.

NONPROCESSED BURLAP.

Description and Uses.

Burlap is the most extensively manufactured of all jute cloths.

The term "burlap" is American, and in a general way refers to all plain woven cloths of single jute yarns. After the weaving operations such cloth may be specially finished but never processed—i. e., bleached, dyed, painted, etc. More specifically, "burlap," unless modified by terms such as "brattice cloth" or "canvas padding," is synonymous with "hessian," which is the English term for plain-woven fabrics of single jute yarns, ranging in weight from 6 to 16 ounces to the linear yard.

Plain-woven fabrics of single jute yarns weighing over 16 ounces to the linear yard are divided into (1) tarpaulin and (2) bagging.

Tarpaulin is used as the basis of water-proofed fabrics of the same name, employed as coverings for hatches, wagons, etc. It differs from burlap in that it is heavier, has more threads to the square inch, and is of a double-warp construction.

Bagging is coarser and more loosely woven than tarpaulin. The best types used in the United States have a double warp. The domestic consumption of double-warp bagging is small compared with that of single warp employed for covering cotton.

Burlap, tarpaulin, and the better grades of bagging have never been distinguished in our tariff acts. Bagging for covering cotton is the only one distinguished from burlap. Trade statistics of foreign Governments do not differentiate between the various types of plain-woven fabrics of single jute yarns.

The term "burlap" as used in this report will include: (1) Burlap, (2) tarpaulin, and (3) double-warp (D. W.) bagging.

The leading use of burlap in the United States, as in all countries, is for sacking and baling. Burlap is made in widths ranging from 27 to 150 inches, and in weight from 6 to 16 ounces to the linear yard. The standard hessian cloth is the 11 porter,[1] 40-inch, 10½-ounce, 12-shot, which is 40 inches wide and weighs 10½ ounces to the running yard. Where the bulk of the demand is for lightweight goods, as in the United States, 40-inch, 8-ounce burlap, 9 porter, 10-shot, may be taken as a standard.

Burlap weighing less than 10 ounces to the linear yard forms the greater part of domestic consumption. A census made by the Department of Commerce in 1918 showed that of the total burlap consumed by 3,473 establishments engaged in some phase of the jute trade, burlap weighing under 10 ounces to the yard constituted 58.3 per cent of consumption in 1917 and 59.1 per cent of the estimated consumption

[1] The porter refers to the reed through which the warp threads pass in the loom, and is the number of splits in the twentieth part of the Scottish ell of 37 inches. The shot is the number of single weft threads per inch.

in 1914 [illegible] abroad, and about as much [illegible] the same result. On that day of the [illegible] were [illegible] per cent consisted of burlap weighing under [illegible] the latter part.

More than [illegible] of the burlap consumed in the United States goes into the manufacture of bags; according to a special study the total burlap used in that country in the calendar years 1914 and 1915 was [illegible] per cent, respectively, of the imports for consumption within the same years.

The leading uses of burlap in the United States are as containers for farm and [illegible] products, such as cotton, fertilizer, flour, sugar, and vegetables. The smaller bags are manufactured from burlap weighing less than [illegible] ounces to the yard. [illegible] census taken in 1914 shows that of the [illegible] bags made of burlap in 1917, 174,000,000 had been manufactured from materials under 10 ounces to the yard, and of the [illegible] estimated for 1918, about 185,000,000 from burlap weighing less than [illegible] ounces.

Millions of yards of burlap are used for baling and wrapping a great variety of products. It constitutes the bulk of burlap as a covering for cotton cloth shipped in bales. One of the largest manufacturers of cotton fabrics stated that it [illegible] before the war when the price was reasonable now we have ample facilities of burlap but the price advanced during the war to a prohibitive point and we were forced to manufacture a substitute which we made by using certain grades of our waste, and we found the substitute approximately satisfactory and much more economical. Now that the price is coming down to a more reasonable point we, of course, can use more of it.[1]

Next to its use for bags and for wrapping and baling purposes, burlap is most extensively employed as a backing for linoleum and floor cloths. In 1914 and 1915, linoleum and floor cloth factories, according to census reports, consumed 42,000,000 and 33,133,000 square yards of burlap respectively. The figure for 1914 is low owing to the high price and scarcity of linoleum burlap and to the substitution of floor coverings made of felt paper.

The leading sizes and weights of burlap used as a foundation for linoleum are—

[illegible] ounces to the square yard.
[illegible] ounces to the square yard.
[illegible] ounces to the square yard.
[illegible] ounces to the square yard.

[illegible] of consumption comes the roofing industry. One [illegible] of roofing products states that he uses yearly about [illegible] yards, the bulk of which consists of the 40-inch width, [illegible] ounces to the linear yard.

[illegible] PADDING, BUCKRAM, AND WEBBING.

[illegible] purposes for which burlap is employed are its use [illegible] as stiffening for keeping garments in shape.

[illegible]

[illegible] See also p. 11. A reprint of this report is [illegible] S. Doc. 436.

[illegible] p. 38.

in furniture for separating the springs from the stuffing, and for horse clothing. The material used by the tailoring and upholstering trades is commonly made from lightweight burlap of close weave and is distinguished from the general run of burlap by the term "jute canvas."

Imports of jute canvas prior to 1914 accounted for about 3 per cent of the domestic consumption of burlap. The best grades of jute canvas are used as interlinings in coats and are known as tailors' padding or canvas padding. Paddings vary in width from 20 to 24 inches, and in weight from 4½ to 6½ ounces to the linear yard.[5] About one linear yard is used in a coat.

Fabrics of flax constitute the bulk of consumption,[6] and because of their stiffness, strength, and evenness, are most suitable for padding purposes. Since 1914 there has been a marked increase in the domestic consumption of low grade paddings made of all jute as well as those made of a mixture of jute and cotton. The construction of these paddings may be judged from the following table giving the specifications of interlinings used in the manufacture of Army clothing.[7]

TABLE 17.—*Constructions of jute canvas padding.*

Material.		Minimum weight in ounces per linear yard.	Minimum threads per inch.		Minimum tensile strength.		Width.
Warp.	Filling.		Warp.	Filling.	Warp.	Filling.	
					Pounds.	*Pounds.*	*Inches.*
Jute	Jute	6	20	24	100	85	22
Do	do	6 5	18	20	100	85	22
Cotton	do	6	25	25	50	85	22

In the act of 1913 paddings are subject to varying rates of duty, according to the materials from which made. Those of all linen or of a mixture of linen and other fibers, with linen as constituent of chief value are dutiable at 30 per cent under paragraph 283; those of jute and cotton or any other mixture in which jute or any other vegetable fiber other than cotton or flax is the component of chief value are assessed at 35 per cent under paragraph 284;[8] and those of all jute are free of duty under paragraph 408.

Closely related to padding is buckram, which is a coarse-woven fabric of cotton or jute stiffened with glue or with starch. Jute buckram, made by subjecting burlap to the process of sizing with starch or glue and then running the material through heavy rollers, finds its greatest use as a body for hats and bonnets. It has been held that the starching or sizing of burlap does not exclude it from the provisions of paragraph 408.[9] Buckram which has been dyed, principally black, is occasionally imported and pays a duty of 10 per cent under paragraph 279. One of the largest bag companies uses from 1,250,000 to 1,500,000 yards of burlap yearly in the manufacture of this article, about two-thirds of which consist of 8-ounce burlap and one-third of 10-ounce.

[5] The construction of a number of paddings of different fibers is given on pp. 64, 65.
[6] A domestic manufacturer of canvas padding estimates that the annual domestic consumption of tailors' padding of all materials is about 50,000,000 yards. (Ways and Means tariff hearings, 1921, p. 2519.)
[7] War Department specification No. 415-4-1249—1919.
[8] T. D. (Abstract) 37515.
[9] T. D. 20611.

Narrow woven fabrics of jute not exceeding 12 inches in width, commonly known as webbings, are used for making bands, belts, etc. In 1919 there were 30,856,000 linear yards of webbing produced in the United States, the greater part of which was made from yarn averaging about 9 pounds.[10] One manufacturer, who specializes in weaving webbing for the upholstery and automobile trades, uses the following jute yarns: 7-pound 2 ply, 14 pounds, 10-pound 2 ply, 16 pounds, and 18 pounds. Three webbings are commonly woven on one loom. Webbings of jute or of any vegetable fiber are specifically provided for in paragraph 262 of the act of 1913, at 25 per cent.[11]

SUBSTITUTES.

No domestic product serves as a satisfactory substitute for burlap. Cotton cloth is its nearest competitor. Its substitution is limited, because burlap possesses a strength which can not be obtained in cotton cloth except at a price much higher than that commonly asked for burlap. Burlap and cotton cloths are each so particularly adapted for certain purposes—burlap for sacking commodities that demand strength of texture rather than closeness of weave, and cotton for sacking pulverized and ground products—that substitution is limited and confined to periods when the price of one is abnormally high in terms of the other. For example, cotton cloth has been substituted for burlap in containers for bran, feed, and similar products, or in recent years, heavy burlap has been substituted for cotton in carriers for cement.

Although jute is weaker in tensile strength than cotton,[12] the difference in strength is not commensurate with the marked difference ordinarily existing in the price of the raw fibers. Cotton sheeting 40 inches wide, 4.25 yards to the pound, and burlap 40 inches wide, 7½ ounces, are standard fabrics, and in any substitution would be interchanged. Expressed in equivalent terms of weight, the cotton cloth weighs 3¾ ounces and the burlap 7½ ounces. The wholesale price in New York, January 1, 1922, of the 40-inch sheeting was 8.75 cents per linear yard and of imported 40-inch burlap, 4.25 cents per linear yard. Thus, while the burlap possessed twice the weight of the cotton cloth, its price was less than one-half.

Burlap bags are cheaper, and because of their greater strength, are superior to cotton bags for sacking heavy commodities such as grain, produce, fertilizer and other rough and bulky commodities. Burlap bags are inferior to cotton bags (1) for small packages; (2) for purposes where possibly the lint of the burlap might affect the contents, such as foodstuffs; (3) where a close woven fabric is required, as for sacking flour, and (4) where the bag is to receive an elaborate trade-mark.

In the past certain manufacturers have stated that burlap has competed with the manufacture of the lowest grades of cotton cloth,

[10] The number or count of jute yarn is stated in terms of the weight (in pounds) of a length of 14,400 yards, which is known as a "spyndle."

[11] T. D. 16652.

[12] Matthews in his Textile Fibers, p. 253, gives the breaking length in kilometers of cotton yarn as 13–14 and of jute yarn 9.9; of cotton thread as 25, and of jute thread as 20.

particularly of osnaburg, a cloth made partly of cotton waste and extensively employed in the production of cement bags.[13]

DOMESTIC PRODUCTION.

The domestic production of burlap and of paddings of all jute, or with jute as chief value, has always been negligible, and with the exception of three mills operated during the war, has been confined to companies that have woven such cloth as a subsidiary part of their business. The output of burlap and of paddings was greatest in 1918–1920. The production of burlap amounted to 7,292,000 linear yards in 1918, to 5,659,580 yards in 1919, and to 4,879,642 yards in 1920. The output of paddings was 8,540,000 linear yards in 1918, 4,200,000 yards in 1919, and 4,150,000 yards in 1920. The domestic consumption of burlap and of all-jute paddings in the same years was between 800,000,000 and 1,000,000,000 yards.

EQUIPMENT.

Machinery for weaving and finishing jute cloths has been standardized. Dundee is the world's greatest manufacturing center for such machinery. Before the war India obtained its jute machinery from Dundee. Since the war, however, the Calcutta industry has begun to manufacture its machinery on a small scale.

METHODS OF PRODUCTION.

The successive steps in the manufacture of burlap may be indicated by naming the processes and the machinery used from the time the raw jute is brought into the factory until the finished cloth is shipped in bales:

Batching: Jute opener, softener.

Preparing: Breaker card, finisher card, first drawing frame, second drawing frame, roving frame.

Spinning: Spinning frame.

Yarn preparation: Cop-winder machine (for weft), drum-winder machine (for warp), dressing machine, drawing-in (handwork).

Weaving: Loom.

Finishing: Cropping machine, damping machine, calendering or mangling machine, inspecting and folding machine.

GEOGRAPHICAL LOCATION.

By far the greater part of the domestic production of burlap in recent years has been the output of factories located in the eastern

[13] A prominent bag company, located in the Middle West, which produces about twice as many cotton bags as burlap bags, late in 1920 wrote as follows:

"In reference to the competition between cotton and burlap bags, cotton bags have an established preference for certain commodities, such as flour, cement, etc., while burlap is used practically as a standard for feed, fertilizer, and kindred products, and substitution of burlap for cotton, where cotton is standard, happens only in cases where the differential between cotton and burlap is abnormally great. Cotton sheeting or cotton osnaburg bags are standard for cement, and the only substitution to any marked degree that we know of was during last year when 30-inch 7-ounce osnaburg cost 25 to 30 cents a yard, as compared with 10 cents a yard now, and 33-inch 10-ounce burlap, which was used as a substitute, was selling at about 17 cents a yard, as compared with about 6 cents a yard now. In other words, when five-sixths of a square yard of the cotton material was worth 13 cents more than a square yard of burlap, added to the difficulty in securing sufficient supplies of cotton, the incentive for substitution was abnormal and should not be taken into consideration. We believe the same situation is relatively true that the competition of burlap and cotton is to a considerable extent a matter of the natural adaptability of the materials for the purposes required."

east of the United States. Of the eight mills that have woven burlap or paddings of all jute, or of jute and cotton, since 1914, two each are located in Massachusetts and New Jersey, and one each in New Hampshire, New York, Pennsylvania, and California.

PRODUCTION.

In comparison with the domestic production of jute yarn and jute cloth, for covering cotton, in which lines the American manufacturer is dominant in his home market, the domestic output of burlap is insignificant, normally less than 1 per cent of the consumption. In 1913 there was only one firm making burlap for sale. This firm, located on the Pacific coast, writing as of November, 1920, says:

> We are the only manufacturers of burlap but practically discontinued the manufacture of same in 1914. * * * The value of the jute looms scrapped in 1914 was about $3,000.

Another mill, which was originally built for the manufacture of burlap and which makes jute twine and cordage its principal products and weaves jute bags on a small scale for a firm manufacturing chemical products, previous to the war wove some burlap for wrapping its own shipments.

The war gave a decided impetus to the production of burlap, principally for paddings in coats and as a base for linoleum. In 1915, following the curtailment of imports of paddings, a domestic mill began weaving canvas padding of flax, jute, and cotton, made in widths ranging from 20 to 27 inches to the linear yard, and in weight from 5 to 12 ounces to the square yard. The production by this mill increased steadily from 1,000,000 yards in 1915 to 3,500,000 yards in 1920. Nine-tenths of the total output consisted of material woven with a cotton warp, with jute as the filling and constituent of chief value. During 1918 this mill also turned out about 3,000,000 yards of 22-inch 6.7-ounce material to serve as interlinings in Army clothing. In 1919 it wove 100,000 yards of jute and cotton tapestry and upholstery ranging from 36 to 54 inches in width and averaging about 15 ounces to the square yard. The jute yarn used by this company ranged from 3½ to 14 pounds and was bought of domestic manufacturers. The looms were designed by an American concern. Since the close of the war this mill has temporarily ceased its manufacture of paddings made from all-jute yarn. It has, however, continued weaving paddings of jute and cotton.

In 1918 two other mills began weaving tailors' paddings of jute and cotton. The total yardage woven by the first in the years 1918–1920 amounted to 3,300,000 linear yards, and of the second about 590,000 linear yards. The first company reports that it was forced to discontinue making such goods in July, 1920, because it could not compete with foreign prices. The mill of the second company was not in operation during 1921. The leading yarns used by the companies were 3½-pound, 4-pound, and 5-pound jute, and 20/2, 14/1, and 30/2 cotton, all supplied by domestic manufacturers.

The company which in prewar years had woven small quantities of burlap for baling its shipments of yarn and twine also pro-

duced during the war paddings of all jute for use as interlinings in Army clothing. The maximum annual production was 1,000,000 yards of 6-ounce padding. This company also arranged that four carpet mills should weave burlap from yarn furnished them. The greatest quantity for any one year woven by the carpet mills was 2,000,000 yards, consisting of 8, 10, and 16 ounce burlap. With the close of the war this mill ceased weaving burlap, finding it cheaper to buy than to manufacture its wrapping materials.

During 1917 and 1918 another company which specializes in the manufacture of jute yarns, twines, and bagging, was induced to weave burlap. In writing of its production, this company states:

* * * The demand for burlaps during the earlier years of the war not only created such an acute shortage of same in this country during the latter part of 1916 and 1917, but created an artificial price level that enabled a manufacturer here to compete with the Calcutta labor market.

At the request of the United States Government, which during 1917 and 1918 was badly in need of bale coverings for overseas goods, we installed a small unit of looms to help the situation out, and these we ran about a year and a half, until the signing of the armistice, together with the making of a fixed price on burlaps at a level which it was impossible for us to compete, made it no longer either necessary or possible for us to run our looms.

Following the embargo placed in 1918 upon exports of jute products from Dundee—the leading source of burlap used as backing for linoleum—two American companies which specialize in the manufacture of linoleum began weaving burlap on a small scale for consumption in their factories.

The first company started producing in October, 1918, and discontinued at the end of May, 1921; the second began in June, 1919, and ended in December, 1920. Their combined output from October, 1918, to May, 1921, amounted to about one-tenth of the burlap used annually in the United States as a foundation for linoleum. All but a small part of that woven consisted of 72 and 144 inch widths.

Foreign Production.

BRITISH INDIA.

India, the world's leading manufacturer of jute goods.—Calcutta, in the Province of Bengal, is the world's largest manufacturer and exporter of jute products. Almost all of the large mills—70 out of a total of 74 in 1917—were situated in the Province of Bengal. These 70 mills employed more than 99 per cent of all the operatives in the jute industry of India.[14]

Under ordinary conditions Calcutta consumes more than half of all the jute grown in the world. During the season July, 1919–June, 1920, the consumption of the Indian mills amounted to 5,227,000 bales of 400 pounds each, as against actual exports of 3,400,000 bales. Of her total jute manufactures she exports about 60 per cent, which in turn represents about 52 per cent of the world's total production of gunnies. In contrast, the United Kingdom, which ranks next in the manufacture of jute goods, exports about 40 per cent of its total production, about 12.5 per cent of the world's output.

[14] "Large Industrial Establishments in India," Calcutta, 1920, p. ii, introductory note.

Importance of the jute trade to India.—In numbers employed the jute industry in 1917 held second place among India's industries. In that year it was surpassed only by mills spinning and weaving cotton, which, numbering 284, employed an average of 282,297 hands daily. Close behind was the jute industry with 75 mills and 262,100 operatives. In March, 1920, according to official British statistics, there were 76 jute mills, with 41,045 looms and 855,307 spindles. The number of operatives was 280,408.

In the Indian fiscal year, 1921, shipments of raw and manufactured jute, with a combined value of $224,869,100 ranked first in point of value of Indian goods exported and constituted 29 per cent of all the Indian merchandise shipped abroad. Their value in the preceding year was $142,373,100, or 24 per cent of the total. Shipments of raw cotton and its manufactures, which ranked in 1920 held first place in value of Indian merchandise sent overseas, yielded this position in 1921 to raw jute and gunnies, i. e., manufactures of jute. In 7 of the 30 years previous to 1921 shipments of raw and manufactured jute have been India's chief article of export.

During the war a decided decline in shipments of raw jute was more than offset by a marked advance in exports of jute manufactures, principally bags and cloth, which increased from an average of 9 per cent of all merchandise exported in 1911–1914 to 22 per cent in 1919, thus rising to first place in value among India's exports. In the period 1911–1914 exports of jute manufactures averaged 646,100,000 yards, with an annual value of $60,000,000, as compared with 714,500,000 yards in the fiscal year 1919, with a value of $135,000,000, with 881,900,000 yards in 1919, valued at $177,000,000, with 643,000,000 yards in 1920, valued at $111,000,000, and with 820,000,000 yards, with a value of $177,000,000, in the year ended March 31, 1921.[1]

The value of raw jute and jute bags sent abroad in 1920 accounted for 14 per cent of all the Indian merchandise exported, and in 1921, 22 per cent. In the former year raw jute was the chief item of export trade, jute manufactures in point of value. This position, however, was reversed in 1921.

Before the war shipments of gunnies made up more than half of the value of exported articles, while raw jute accounted for [illegible] per cent of the total, and in 1920–21 for 9 per cent.

[illegible]—The dominant position of India's jute industry is the result of a steady and rapid growth that has few parallels in the annals of [illegible]. About 1850 the manufacture of jute goods was first started in a primitive way in India by settlers from Scotland, using the jute machinery and methods in Dundee. Since that time the Indian industry has shown [illegible]. According to [illegible] in 1884 [illegible] and that [illegible] in 1914 [illegible] the result of [illegible] in 1914 [illegible] and 80,000 in 1920, the years ended March, 1914 and 1920.

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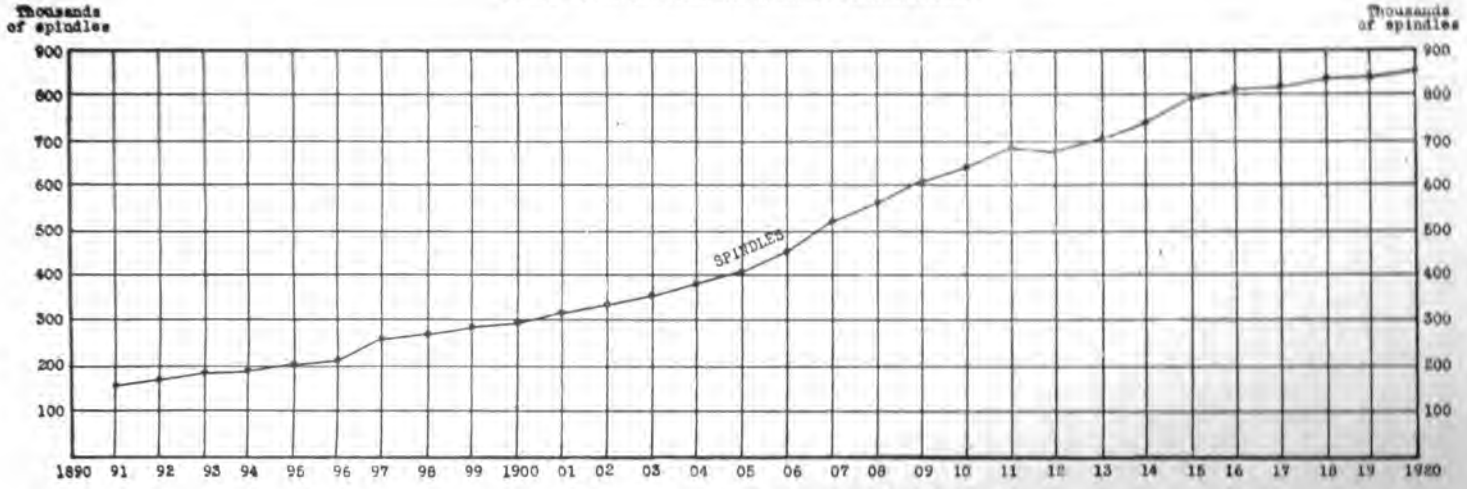
[1] [illegible]
[2] [illegible]
[3] [illegible]

CHART C.—Spindles in Indian Jute Industry, 1891-1920.

(*Source*: Statistical Abstracts Relating to British India.)



More striking has been the increase, particularly since 1900, in the number of spindles working on jute products. In the period 1880–1900 they advanced fourfold, from 70,840 in 1880 to 295,302 in 1900. The ratio of increase was slightly less during the interval 1900–1920, when their number advanced steadily, with the exception of 1912, to a total of 855,307 in 1920.

Keeping pace with increases in spindleage and loomage the number of hands engaged by the jute mills in 1880–1900 also advanced about fourfold, from about 27,000 to 102,000. In 1911 the operatives numbered 216,390, and in 1920, 280,408.

The dividends returned by the mills indicate that the industry is profitable. Of 35 mills publishing financial statements for their fiscal year 1912, 6 reported no dividends and 29 an average of 12.5 per cent; and of 37 in 1914, 9 announced no profits, and 28 an average of 14.6 per cent each. Two companies returning extra large dividends for 1914, one of 110 per cent and the second of 55 per cent, account for the 1914 average being in excess of 1912. The war period was one of unprecedented prosperity for the Indian industry; 42 companies returned dividends for 1918 averaging 145 per cent. The close of the war was not followed by any marked decline in profits. For their fiscal year 1919, 42 companies announced dividends averaging 131 per cent per mill, and for 1920, 134 per cent.[18]

At the close of the war, Calcutta prepared for the greatest expansion in its career. In January, 1920, 14 new mills were in course of construction.[19] It is estimated that the total loomage of these mills, combined with the extensions planned by the mills then in operation, amounted to a 20 per cent increase in weaving capacity.

By January, 1921, only 1 of the 14 mills had been completed. The projects for two others had been abandoned. A number of factors retarded the anticipated expansion, the foremost of which was the depression in late 1920 in trade the world over, which cut down materially the demand for gunnies, and caused production to run far ahead of consumption. Accompanying the decline in demand was a sharp break in prices. The 40-inch, 10½-ounce burlap was selling in Calcutta for 4.98 cents a yard in December, 1920, and for 4.21 cents per yard in June, 1921, as compared with 5.51 cents in January, 1914, and 9.08 cents in January, 1920.[20]

The latest official figures available regarding Indian weaving capacity are those showing the looms in existence in early 1920. At that time there were 41,045 looms turning out gunny cloth, as compared with 36,050 in 1914 and 31,418 in 1910. Private sources give the total on January 1, 1921, as 40,898, and on January 1, 1920, as 40,447.[21]

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[18] The profits returned by individual jute mills for each of the years 1912–1920 is shown on pp. 78, 79.

[19] "Indian Jute Mills and Their Looms," on Jan. 1, 1920, published by Moran & Co., brokers, Calcutta, India.

[20] Rupee=32.44 cents.

[21] Statistics other than those of the Indian Government are taken from "Indian Jute Mills and Their Looms," published annually on Jan. 1 by Moran & Co.

The number of jute looms in India since 1890, as given by official and private sources, follows

TABLE 18.—*Jute looms in India, 1890–1921.*

Year	Number given by official source [1]	Jan. 1—	Number given by private source [2]
[illegible]	4,204	1890	7,964
[illegible]	14,119	1900	15,536
[illegible]	19,001	1905	21,314
[illegible]	21,414	1910	21,755
[illegible]	24,169	1911	22,711
[illegible]	24,927	1912	22,632
[illegible]	24,934	1913	27,336
[illegible]	26,650	1914	28,129
[illegible]	24,179	1915	28,354
[illegible]	26,486	1916	28,652
[illegible]	26,607	1917	29,065
[illegible]	26,649	1918	29,491
[illegible]	26,954	1919	29,451
[illegible]	31,055	1920	29,447
[illegible]		1921	[3] 29,398

[1] [illegible] showing the date when the yearly census was taken, or whether the figures [illegible] in operation.

[2] [illegible] Statistics of British India," published by Moran & Co.

[3] [illegible] Journal," Calcutta, of Jan. 14, 1921, states: "On the 1st of January, 1915, there [illegible] looms working. On the 1st of January 1919, this number had increased to 39,451, which had [illegible] the 1st of January, 1920, to 40,407, and during 1920 about 2,000 additional looms have [illegible]."

Number of sacking and hessian looms. The number of looms for turning out twilled cloth installed between January 1, 1919, and January 1, 1921, was 370, and those for weaving burlap, 1,077.[22] A greater number of new looms would have been added but for labor trouble during 1920 in Scotland, which supplies practically all the machinery.

That the number of new hessian looms added since early 1919 is in excess of the new sacking looms is in keeping with the trend of the industry during the past 10 years. In 1890 sacking looms totaled 6,500, and burlap looms 1,968. By 1910, the hessian looms had taken the lead with a total of 18,534 as against 13,421 for sacking. At the beginning of 1921 the totals were 16,445 sacking and 24,453 hessian looms.

Comparatively few of the hessian looms are wide enough to turn out backing for use in the manufacture of linoleum. About three-quarters of the hessian looms in January, 1921, had reeds—narrow strips of steel wire to space the warp threads and to keep them parallel—evenly divided ranging between 46 and 52½ inches. On the same date there were 85 looms that had reeds between 78 and 84 inches. Looms with reeds in excess of 84 inches, if any, were [illegible] classified as "other widths," which totaled 483.[23] [illegible] The growth of the Indian industry [illegible] the world's decreasing consumption of jute cloth and [illegible] that Calcutta has [illegible] percentage of her raw material to [illegible] declined. The raw [illegible] 1921 totaled 3,314,158 and [illegible] average of 4,223,000 bales [illegible] 1910–1914.

[illegible] 14,339,000 in 1913, [illegible]

[illegible] Indian Finance Current," Apr.

The demand for jute manufactures has been confined to bags and cloth, for India's exports of yarn and twist never, up to 1913, were small and declining. Only in four years during the period 1900–1913 did the shipments of yarn and twist exceed a million pounds. Previous to the war the largest exports were in 1902, when they totaled 5,221,000 pounds. Beginning with 1907 the quantities of yarn exported declined year by year to 1,741 pounds in 1913. Since that time there has been a marked positive increase. From 317,000 pounds in 1914, the quantity advanced to 3,214,000 pounds in 1918, and then fell back to 1,406,000 pounds for the following year. Exports reached a new level in the 12 months ended March, 1921, when their total was 21,275,781 pounds or 9,494 tons.[25] Shipments in the same time of cloth and bags amounted to 537,424 tons and 467,581 tons, respectively. It is to the close of the war shipments of jute yarn were in large part consigned to Japan and Australia.

Exports of gunny cloth.—Exports of gunny cloth, which classification includes all goods produced from jute, have continued equally with shipments of bags to the present dominating position of the Indian industry.[26] The basis of the present export trade in gunny cloth was laid in the years 1888–1890, when the shipments from India increased from 4,000,000 to 30,000,000 yards. By 1911 exports had jumped to 800,000,000 yards, and they kept increasing by yearly additions of about 400,000,000 yards to 2,280,000,000 yards in 1917. The last part of the war saw a slight falling off from the peak reached in 1917. A twofold increase in the number of gunny bags shipped—principally hessian bags for investment purposes—which rose from 387,000,000 in 1913 to an average of about 780,000,000 bags during the next three years and then declined at the close of the war to 542,000,000, accounts for the decrease in cloth shipped in the fiscal years 1918–1919.

With the close of the war exports of gunny cloth advanced to new levels. For the years ended March 31, 1920, and 1921, the exports were 1,275,124,656 and 1,352,738,649 linear yards, respectively.

Had shipments been limited to actual requirements the aggregate for 1921 would not have surpassed the figure for 1920. The demand for gunnies depends upon the volume of goods to be removed. Notwithstanding the world-wide slump in trade commencing in the last part of 1920, which was followed by a sharp decline in commodity prices, incapacity to pay, and a marked increase in stocks at hand in the largest centers of consumption, Calcutta continued to run her mills on full time and to expand the volume of her shipments. Up to the end of October, 1920, exports of cloth in the past ten months were 35 per cent greater than for the same period in 1919. In the same time there was a gain of 36.6 per cent in the number of bags shipped abroad.

[25] The probability of a further increase in India's shipments of yarn is discussed on page 46.

[26] Exports of gunny bags and cloth, 1900–1922 (rupee=32.4 cents) were as follows:

Fiscal year.	Cloth		Bags	
	Quantity.	Value.	Quantity.	Value.
	Tons.		*Tons.*	
1900		$8,792,704		$31,417,941
1910		27,112,097		72,852,750
1919		80,075,892		53,063,107
1920	337,423	101,044,517	316,832	69,790,869
1921	377,424	92,579,200	465,588	71,860,848
1922 (8 months)	190,808	34,418,085	253,130	31,966,825

In November, 1920, the disparity between the consumption and the production of gunnies became so evident that it was decided to curtail weaving operations. Accordingly, an agreement was entered into by all the mills to reduce during the period January–June, 1920, the working week from six to five days. In March it was agreed to run the mills only four days a week in the months April, May, and June. Later the 4-day week was successively extended through the first part of 1922.

Following this agreement there was a marked decline in shipments. In January–September, 1921, 812,819,000 yards of cloth were sent abroad, a decline of 28 per cent compared with the same months in 1920. Exports of bags likewise fell off, but not in the same degree. There were 345,951,000 bags shipped in the first nine months of 1921, as against 425,764,000 in the corresponding period in 1920.

Percentage of cloth shipments consisting of burlap.—India's shipments of gunny cloth consist almost entirely of (1) hessian, and (2) sacking. Exports of burlap in recent years have formed from 96 to 98 per cent of all the cloth shipped. In contrast exports of bags are usually made up to a very large degree of sacking bags. That India's foreign trade in gunnies is practically limited to hessian cloth and to sacking bags, is explained by the fact that the hessian is shipped abroad for manufacture into sacks, whereas the twilled cloth is retained to be sewed up by Indian operatives. Beginning with 1917, India divided her shipments of gunny cloth and bags according to those consisting of (1) hessian, and (2) of sacking. Exports of hessian cloth amounted in 1920 to 1,233,141,000 yards and in the fiscal year 1921 to 1,318,014,000 yards, and of sacking in the same years to 41,982,000 and 34,724,000 yards, respectively.

Exports of cloth to the United States, 1900–1921.—The United States, India's leading market for hessian and hessian bags, normally receives about two-thirds of all the burlap and about 40 per cent of all the burlap bags shipped. During the fiscal year 1921, 928,392,169 yards, or 70 per cent of all the hessian, and 64,300,000 bags, or 47 per cent of all the hessian bags, were consigned to the United States. As a rule the hessian cloth sewed into bags is equal to about 5 per cent of the cloth shipped as taken from the loom.

Since 1900 shipments of cloth direct from India to the United States have constituted, annually, with the exception of the war years, from 60 to 70 per cent of Calcutta's constantly expanding exports. For instance, gunny cloth consigned to the United States for every fifth year beginning with 1900 has amounted to between 61.1 and 69.9 per cent of all the jute cloth exported from India. In the five years, 1910–1914, the United States received 68.4 per cent of the cloth shipped direct to consuming countries.

The war affected only to a slight degree India's shipments to her leading market. The American consumption of jute cloth of Calcutta manufacture amounted to 56 per cent of the total in 1917 and 58 per cent in 1918. With the restoration of normal conditions, shipments to the United States in the fiscal year 1920 amounted to 64.21 per cent and in 1921 to 68.96 per cent of all the jute cloth sent abroad.

The United States is even a greater consumer of Indian jute cloth than the figures relating to direct shipments from India indicate. In addition, the United States usually consumes more than half of the

value of jute piece goods and bags of foreign and colonial merchandise exported from the United Kingdom. The bulk of this trade consists of Indian jute piece goods. In the years 1910–1914 such goods, showing little variance as regards value, averaged yearly about $8,661,000, of which 57.1 per cent were consigned to the United States.

The extent to which the requirements of the American market have contributed to the growth of India's export trade in gunny cloth is summarized in the following table:

TABLE 19.—*Exports of jute cloth from India to the United States, 1900–1921.*

Fiscal year.	Total to all countries.		To the United States.		Per cent of total quantity.	Per cent of total value.
	Yards.	Value.	Yards.	Value.		
1900	307,021,259	$10,792,704	194,992,909	$5,347,014	63.51	60.81
1905	575,511,587	16,598,322	352,048,890	9,797,510	61.17	59.03
1910	940,101,340	27,349,582	657,432,703	18,190,440	69.93	66.52
1915	1,057,324,125	42,530,339	705,999,139	27,789,910	66.77	65.34
1920	1,275,124,656	101,044,517	818,786,800	62,179,125	64.21	61.54
1921	1,352,738,649	92,579,206	932,956,469	60,657,172	68.96	65.51
1922 (8 months)	742,420,973	31,964,828	524,989,800	23,044,000	70.71	72.09

The amount of sacking cloth shipped to the United States is insignificant. In the period 1917–1921 the largest quantity was 5,250,000 yards, in 1917.

Exports to other countries.—After the United States India's leading markets are Argentina and countries of the British Empire. Shipments to these three markets constitute all but few per cent of India's total exports.

Prices of cloth sent to each country.—As a rule the price per yard of gunny cloth consigned from India to the United States is lower than that sent to the United Kingdom, which in turn pays less for its cloth than the countries of the British Empire. Prices of jute cloth shipped to the United States in 1900, 1905, and 1910 were practically the same, and in each year less than prices to the United Kingdom. The prices to the United States ranged from 2.74 cents to 2.78 cents per yard and to the United Kingdom from 3.16 cents to 3.64 cents per yard. The great demand of the United Kingdom during the war for jute cloth, from which to make sand bags, combined with transportation difficulties, limit the value of any comparisons made during the war. For the years 1920 and 1921 the prices were 7.59 cents and 6.50 cents for the United States as compared with 8.51 cents and 7.61 cents for the United Kingdom.

TABLE 20.—*Average prices of burlap exported from British India.*[1]

Fiscal year.	United States.	United Kingdom.	British Empire.	Fiscal year.	United States.	United Kingdom.	British Empire.
	Cents per yard.	*Cents per yard.*	*Cents per yard.*		*Cents per yard.*	*Cents per yard.*	*Cents per yard.*
1900	2.74	3.16	3.24	1919	10.01	5.07	7.36
1905	2.78	3.19	3.28	1920	7.59	8.51	.....
1910	2.77	3.64	3.55	1921	6.50	7.61	.....
1915	3.94	3.92	4.43	1922 (8 months)	4.39	.....	.....

[1] Rupee taken at par value of 32.44 cents.

The difference in prices is due to the difference in quality. The burlap sent to the United States is coarser, lighter, and more loosely woven than that shipped to the United Kingdom.[27]

The trend of the Indian industry.—With the jute industry curtailing its production in 1921, and with a number of new mills under construction, it has been suggested that, with the return of normal trade conditions, India's capacity may be in excess of the demand for gunnies, leaving her with a surplus of yarn which will enable her to take a prominent part in a trade in which hitherto she has not figured.[28]

Undoubtedly an output of cloth continuing over a period in excess of requirements will naturally be followed by a curtailment of weaving operations and a determined effort to find markets for yarn not made into cloth. The American home market for jute yarn is large. In 1919 the American production of jute twine (other than binder), jute rope, and sales of jute yarn to carpet mills, totaled 149,684,000 pounds. Dundee's domestic and foreign trade is also large.[29] Exports of yarn in the calendar years 1920 and 1921 from the United Kingdom amounted to 43,549,200 pounds and 27,876,900 pounds, respectively.[30]

Prior to the trade depression, which set in during the last half of 1920, India's facilities for spinning jute yarn were not in advance of the demand for hessian cloth and sacking bags. The records for exports of cloth and bags, the large dividends returned by the mills, and the number of new mills started, testify that trade was brisk and that there was little slack between production and consumption from the close of the war up to late 1920.

With the falling off in the demand for her standard lines, the easiest method for India to dispose of her surplus material would be to ship it in the form of yarn. Curtailed production of gunnies, however, was not followed by an increase in shipments of yarn. The quantity of yarn exported in April–November, 1921, was 1,567,302 pounds as against 7,415,477 and 1,667,952 pounds for the same period in 1920 and 1919. While the quantity exported in the fiscal year 1921 was the largest on record—10,178,785 pounds—it gives little promise of yarn becoming one of India's standard lines.[31]

Several explanations may be offered for the small volume of yarn exported in a time when the Indian industry was facing the greatest depression in its history. The readiest explanation is that running the mills on part time since January, 1921, has brought the production of gunnies[32] into line with consumption, and has cut down the amount of yarn available for export.

Whether, upon the restoration of normal trade conditions and upon the resumption of full time by the mills, exports of yarn will advance, is contingent upon the relation of spindleage to the consumption of hessian cloth and sacking bags. A margin between spindleage and the amount of cloth necessary to fill the world's normal increased

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[27] For a discussion in detail of the types of burlap imported into the United States from India see p. 51.
[28] Ways and Means tariff hearings, 1921, pp. 2417–2419.
[29] The United Kingdom's trade in jute is shown on p. 80.
[30] Shipments of English jute yarn to the United States in 1919 amounted to 97,200 pounds; in 1920 to 1,782,900 pounds, and in 1921, to 9,308,300 pounds. Total domestic imports of single and plied jute yarns for consumption in the United States in 1919 and 1920 were 62,029 and 2,593,100 pounds, respectively.
[31] Exports of yarn during April–June, 1921, were 236,446 pounds as compared with 3,577,806 pounds, and 711,240 pounds, respectively, for the same periods in 1919 and 1920.
[32] According to the "Dundee Prices Current" of Feb. 15, 1922, Calcutta's exports of hessian cloth for the months January–November, 1921, totaled 1,040,928,842 yards as compared with 1,337,809,614 yards for the corresponding period in 1920.

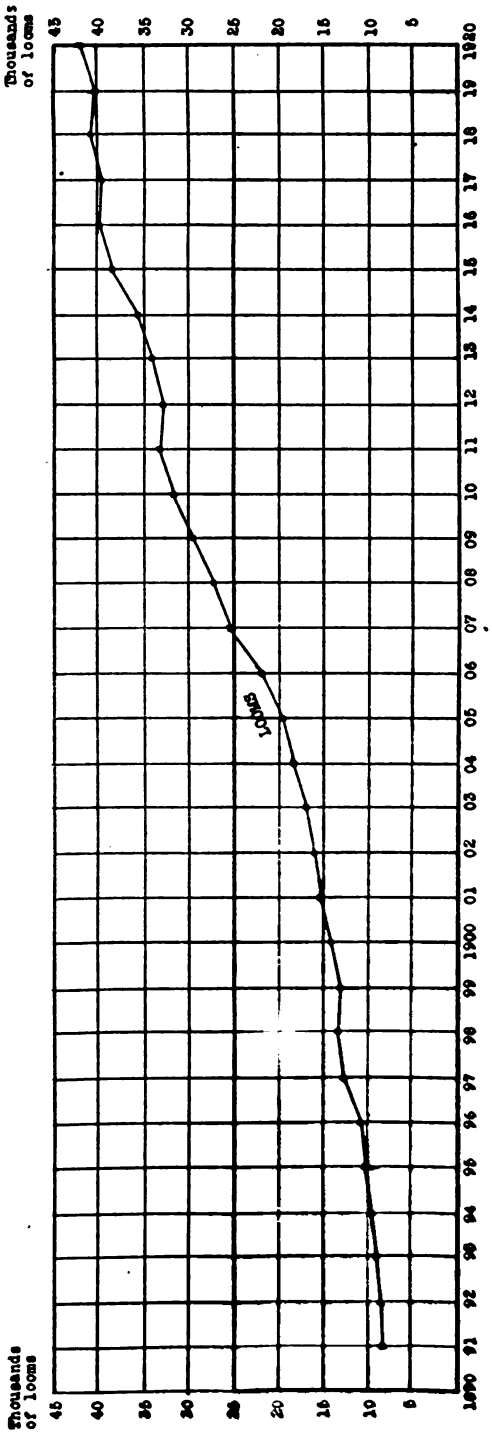

CHART D.—Looms in Indian Jute Industry, 1891–1920.

(*Source:* Statistical Abstracts Relating to British India.)

requirements of hessian cloth and sacking bags will find India greatly expanding her record shipments of yarn in the fiscal year 1921. With the demand for gunnies running ahead of production year by year, as in the prewar period, India will have no surplus yarn for export.

The marked and almost continuous increase in spindleage in the prewar years, and India's concentration on hessian and sacking in the same time, makes spindleage a ready means of estimating the yearly increase in capacity required to enable Calcutta to keep abreast of the world's normal increasing consumption of gunnies. The constant relation of 20 to 21 spindles to a loom[33] makes it possible to translate spindleage into loomage and to determine whether the advance in loomage since the close of the war has been below or in excess of the annual increases in the years 1891–1915.

In only one of the years in the period 1891–1920[34] did the number of Indian spindles fail to show a gain over the total for the previous year. In 20 of the 25 years, 1891–1915, the annual increase ranged between 4.03 and 8.61 per cent.

On the basis of the annual growth in the quarter of the century 1891–1915, an advance of 6 per cent in capacity for each of the years 1920 and 1921 would be normal. This is allowing that the successive increases in spindleage during 1916–1919 of 2.12, 1.46, 1.18, and 0.685 per cent were commensurate with the increased requirements in the same time. On the basis of a 6 per cent[35] increase in capacity for the fiscal years 1920 and 1921, the new looms installed during 1920 would have numbered 2,400 and in 1921 2,500, bringing the total loomage at the end of March, 1921, to about 45,000 looms. The number in existence in early 1920, according to official statistics, was 41,045. That the looms actually added have been less is due in part to the difficulty in securing new machinery and the abnormal trade conditions in late 1920, which brought the work on the new mills and the extensions planned by the old mills to a standstill.

There is little reason for believing that if world trade should become normal in 1921 the demand for cloth and bags from India's customary markets, added to those of the new markets she may win, will reach the point that it will call for the immediate use of 8,000 looms or 20 per cent increase in capacity contemplated in early 1920. More likely the serious depression in the Indian industry in 1921 has put off for years the increases in loomage planned by the older mills and will prove disastrous to a number of newly launched companies,[36] with the result that when trade revives from the slump, which began in 1920, the mills under course of construction will be more in line with the world's normal and advancing consumption of hessian cloth and sacking bags.

DUNDEE.

The rise and decline of the Dundee jute industry.—Dundee, which in 1836 initiated the machine manufacture of jute and which enjoyed a

[33] The number of spindles to a loom in 1891 was 20.02; in 1895, 20.02; in 1900, 20.91; in 1905, 20.46; in 1910, 20.50; and in 1914, 20.64.

[34] The latest official figures available showing the spindleage employed in spinning jute yarn are those for the year 1919–20.

[35] The average annual increase in the years 1891–1918 was 6.23 per cent.

[36] Writing of the outlook of the Dundee textile machinery industry for 1921, the American consul at Dundee, in his annual report for 1920, transmitted Oct. 29, 1921, states: "The outlook for the ensuing year (1921) is not highly encouraging, as a large number of orders for new mills in India have already been canceled or greatly curtailed owing to the unsatisfactory conditions in the jute trade, while delivery of orders has been in many cases indefinitely postponed."

monopoly of the world's production of jute goods in the 20 years following, is to-day second only to India as a manufacturer of jute cloth and bags. It was not until 1856 that the first jute machinery was sent to India, and not until 1861 that the first jute mill was started in continental Europe.

During the half century following the establishment of the industry, the Dundee industry progressed by leaps and bounds, reaching its zenith in the decade 1880–1890. During the following decade, however, it declined to a level which it maintained with difficulty during the following 20 years.

Shipments of jute cloths represent the bulk of Dundee's exports, which are given in English trade statistics under the classification of "jute piece goods" without reference to types of cloths shipped, or whether bleached, dyed, stained, or in any manner processed.

The following table giving the United Kingdom's exports of jute piece goods of domestic manufacture shows the rise, decline, and stationary position of the Scottish industry:

TABLE 21.—*Exports of jute piece goods of English manufacture, 1861–1921.*

Year.	Yards.	Value.[1]	Year.	Yards.	Value.[1]
1861	6,519,252	$618,196	1905	170,383,800	$9,624,648
1870	51,920,808	3,842,866	1910	176,435,800	10,026,290
1880	183,202,400	10,976,405	1915	109,156,000	7,944,609
1890	273,775,900	12,778,626	1920	[2] 149,345,600	32,823,248
1900	173,976,800	9,126,040	1921	[2] 71,635,200	10,496,376

[1] Pounds sterling converted to dollars at £=$4.8665.
[2] Square yards.

In the four years 1910–1913 exports ranged between 149,000,000 and 176,000,000 yards. During the first four years of the war shipments from Dundee fluctuated between 109,000,000 and 134,000,000 yards. Owing to an embargo placed on jute products in 1918, the total fell to 31,594,000 yards. For the years 1919 and 1920 the totals were 111,321,000 linear yards and 149,345,600 square yards, respectively.

The leading reasons for the decline of the Dundee jute industry from the peak reached in 1891, when exports of jute piece goods amounted to 283,618,000 yards, are:

1. The rise of Calcutta as a jute manufacturing center. Not only has the Indian industry wrested from Dundee the dominant position in many neutral and colonial markets, but it has also made serious inroads upon Dundee's home market.

The value of the United Kingdom's imports of jute manufactures, other than cordage, cables, ropes, and twine, advanced from $14,065,000 in 1913 to $30,450,000 in 1919 and to $36,373,000 in 1920. In 1905 India supplied $9,405,000 of a total of $10,131,000 representing imports of jute manufactures other than cordage; in 1910, $11,800,000 of a total set at $15,191,000; and in 1915, about $22,418,000 of the aggregate, $23,395,000. India's competition has forced Dundee to concentrate more and more in the production of specialties, such as fine yarns, figured fabrics, and wide hessians used as a backing for linoleum.

2. The tendency for all nations to become self-sufficient in the manufacture of jute products.

As jute manufactures are comparatively easy to make, there is a tendency to stimulate domestic production by means of high tariffs. Formerly, Germany, Austria, France, and Belgium depended upon Dundee. Long before the war, however, these countries had become independent and were competing with Dundee in neutral markets.

Exports to leading countries.—Dundee's leading markets are the United States, Canada, and Argentina. These countries take not only about 70 per cent of Dundee's exports of jute goods, but about 85 per cent of jute cloths exported from India.

The United States is both Dundee's and Calcutta's best market. In 1900 and 1910 consignments of piece goods to the United States ranged between 49.7 and 57.3 per cent of Dundee's shipments. In the decade 1910–1919 such exports of jute goods from Dundee to her leading market, varying between 40.27 and 59.65 per cent, averaged 49.9 per cent of the total.

Formation of the Jute Industries Limited.—The most recent development in the Dundee jute industry has been the formation of the "Jute Industries Limited," with a nominal capital of $34,550,500. This company plans to operate as spinners, manufacturers and merchants, of cotton, flax, hemp, jute, and wool. By the last part of November, 1920, it had acquired a control of the seven leading jute spinners and manufacturers,[36] employing about 14,000, or one-half of the operatives engaged in the Scottish industry.

IMPORTS.

IMPORTS FOR CONSUMPTION.

Imports of burlap for domestic consumption have increased more than twofold since the beginning of the century. From 1899, the first full year for which statistics on the basis of pounds are available, to 1920 and 1921 advances of 220 and 217 per cent, respectively, were made.

The marked advance in the domestic consumption of burlap since 1899 is shown in the following table:

TABLE 22.—[illegible], 1899–1921.

[illegible]	[illegible]	[illegible]	[illegible]	Average yearly quantity.	Average yearly value.
	[illegible]			*Pounds.*	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	$85,323,539
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible],746,318
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	72,386,222
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	41,364,713

[illegible] ... which has been proc- [illegible]

[illegible] ... spinning and weaving; Gilroy [illegible] ... and weaving; J. & A. D. [illegible] ... Sanderman & [illegible] ... Walker & Sons Ltd., spinning [illegible]

DOMINANT POSITION HELD BY BRITISH EMPIRE.

In 1920 and 1921, 98.94 and 99.12 per cent of imports came from British India and the United Kingdom. Shipments from India accounted in 1920 for 89.25 per cent and in 1921 for 92.66 per cent of all the hessian imported as against 9.86 and 6.28 for the United Kingdom.

The dominant position held by the British Empire in the American burlap trade is evinced by the record of imports since 1905;[27] by five-year periods, shipments from British territory have constituted from 99.12 to 99.54 per cent of the total quantity.

Since 1905 Indian goods have been forming an ever-increasing percentage of the growing domestic consumption. During the years 1905–1909 India supplied the United States with 81 per cent of its burlap. In the period 1915–1919 the percentage advanced to 89. In the 15 years 1905–1919 such imports rose from a yearly average of about 257,000,000 pounds to 374,000,000 pounds. During the fiscal years ended June 30, 1920 and 1921, India's shipments, totaling 482,932,000 and 497,688,374 pounds, respectively, surpassed all her previous records.

While India has been finding a constantly expanding market in the United States, Dundee's trade has been stationary. Shipments from Dundee averaged 58,672,000 pounds in 1905–1909 and 59,867,000 pounds in 1910–1914, while domestic consumption of English hessian fell to an average of 38,000,000 pounds for each of the years 1915–1919. With the close of the war, Dundee's shipments advanced to their normal level, with a total of 53,402,000 pounds for 1920. Imports of English cloth during the fiscal year 1921 amounted to 33,753,396 pounds, about 80 per cent of which was entered during the first half of the year.

As in the case of cotton bagging, burlap from Dundee commands a higher price than that from Calcutta. Up to 1914 the difference in the prices of Dundee and Calcutta hessians was well-defined; for instance, in the years 1905 and 1910, burlap received from the United Kingdom was quoted at 1.22 and 1.53 cents per pound higher, respectively, than that shipped from India. The relatively higher prices of the Scottish product in recent years is shown in the following table:

TABLE 23.—*Prices per pound[a] of burlap imported into the United States, 1905–1921.*

Fiscal year.	From United Kingdom.	From British India.	Fiscal year.	From United Kingdom.	From British India.
	Cents.	*Cents.*		*Cents.*	*Cents.*
1905	6.38	5.16	1918	19.79	12.80
1910	6.32	4.79	1919	21.01	17.33
1915	9.81	6.69	1920	24.99	15.27
1916	13.19	8.37	1921	21.69	11.17
1917	16.22	9.98	1921 (calendar year)	10,59	8.22

[a] To convert these prices on the basis of linear yards, 9 ounces may be taken as the average weight of a linear yard.

[27] Quantities of burlap imported according to countries are available beginning with the fiscal year 1905.

TYPES OF CLOTH IMPORTED FROM DUNDEE AND FROM CALCUTTA.

Burlap from Dundee is superior to the Calcutta product. Imports of English manufacture fall into three classes:

1. Heavy weight burlaps which, because of their superior quality and finish, sell for a higher price than those from Calcutta. A large part of the heavy burlap imported from the United Kingdom consists of material of Indian origin, shipped to Dundee where it is given a special finish.

2. Burlaps of extra-wide widths, used in the manufacture of oilcloths and linoleum. One-third of Dundee's loomage, it is estimated, consists of wide looms for the manufacture of linoleum backing.

3. Light-weight burlaps, of extra fine finish such as tailors' padding.

Before the onward march of the Indian industry, Dundee has been forced to yield a constantly increasing part of the American market. To-day Calcutta has entirely supplanted Dundee as a source of materials for bag-making. An inquiry among American bag producers shows that during the years 1914–1919 only one obtained his material from Dundee, and under emergency conditions.

Linoleum burlap and paddings are also imported from Belgium. In the latter line Belgium's competition with the United Kingdom is of a formidable character.

SIZES AND WEIGHTS OF CLOTH IMPORTED.

There are no official statistics giving the sizes and widths of burlap received from each country. Statistics are available, however, for imports for consumption during the years 1897–1913, according to three classes: (1) Fabrics weighing not less than 6 ounces per square yard and not exceeding 30 threads to the square inch, counting warp and filling. This class was further limited during the years 1897–1908 to burlap not greater than 60 inches in width. Previous to 1909, imports for bag-making purposes fell under this heading and after 1909, in addition, burlap of wide widths used as backings for linoleum. (2) Those exceeding 30 and not exceeding 55 threads to the square inch, counting warp and filling. Under this heading fell the best grades of jute canvas imported for use as paddings, for upholstery, horse clothing, and tarpaulins. (3) All other burlaps not specially provided for. This general classification during the years 1897–1913 included all fabrics of extra, no construction, such as those weighing less than 6 ounces to the square yard, and exceeding 55 threads to the square inch, and in addition during 1897–1908, that used by linoleum factories.

The percentages of total imports falling under each of these headings tended to remain the same during the period 1900–1908. Material not exceeding 30 threads to the square inch and that not in excess of 60 inches in width constituted 87.2 and 86.5 per cent of all burlap imported in the years 1900 and 1913. In the same years burlap exceeding 30 and that not over 55 threads to the square inch constituted 4.7 and 3.8 per cent respectively. All other burlaps, chiefly that used by linoleum factories, made up the remaining 8 per cent in 1900 and 9.7 per cent in 1913 of the total quantity.

The elimination of the clause providing that goods under the first part of the specific paragraph could not be greater than 60 inches in width, caused the material ordinarily used for linoleum to come within the provision of the specific paragraph. This change resulted in fabrics exceeding 6 ounces per square yard and not over 30 threads to the square inch composing all but 3 to 4 per cent of total imports in 1910. In the same year, imports of burlap between 31 and 55 threads to the square inch showed a decline to 2.3 per cent of the total, and those not specially provided for fell to 1 per cent of the whole.

Competitive Conditions.

BRITISH INDIA.

Causes for India's dominant position.—The two leading causes for India's position as the world's leading producer and exporter of jute cloths, and the dominant place she holds in the American trade in burlap, are:

1. The production of the world's supply of jute, enabling her to save freight charges.
2. An abundance of cheap but comparatively unskilled labor.

The cultivation of jute is practically confined to India, the amounts grown elsewhere, as in China, Egypt, and East Africa, being negligible. Unsuitable climatic conditions and the lack of cheap labor have so far rendered ineffective attempts to produce it in other countries. Jute is one of India's leading staple crops. The acreage devoted to this fiber averages about 3,000,000, with an annual production of seven to ten million bales of 400 pounds each.

All but a small part is grown in contiguous States, Bengal and Assam. The mills are located upon the banks of the Hoogly, which flows through the heart of the jute-growing section, and forms Calcutta's outlet to the sea. On the Hoogly is transported most of the jute sent to the mills and to Calcutta for shipment overseas.

This concentration of the industry makes it possible for the mills to ship their cloth and bags from Calcutta on practically the same terms as the exporter of raw material, who has to pay the charges for having jute transported to the pressing mills, and then conveyed to the ship. A cubic ton, of 2,240 pounds, of burlap occupies 50 cubic feet; of bags from 50 to 52 cubic feet, and of raw jute from 57 to 62 cubic feet. As the rates are commonly based on space occupied, it costs about 10 per cent less to ship a given weight of gunnies than the same weight of raw material. Shipments of gunnies to the United States from India in the calendar year 1921 amounted to 211,670 tons.

In the case of bagging, however, the small imports of Indian bagging, and the restriction of their consumption to the Mississippi Delta, have made the question of comparative freight charges of little importance in the past. In the fiscal year 1921 the American consumption of Calcutta bagging amounted to 2,764,000 square yards. With the two leading domestic bagging concerns, however, preparing to manufacture bagging in India for the American market, it is likely that imports will increase, and that the use of foreign bagging will become more general throughout the cotton region. These two companies will thus have the advantage in competing with domestic mills located at a distance from centers of consumption.

Labor costs.—The absence of a domestic burlap industry prevents a direct comparison of wages in America and India. The nearest approach to an American industry manufacturing jute cloth is that producing cotton bagging. The classes of workers and the amount of skill required in each line are not the same. Cotton bagging is made from large, rough, jute yarn very loosely woven, whereas burlap is a comparatively fine jute yarn product which has to be carried on a number of processes beyond cotton bagging. An authority who recently visited India, estimates the labor costs of producing burlap as about three times that for the same quantity of cotton bagging.

For the purpose of comparing American and Indian wages, the Commission obtained from four domestic manufacturers of cotton bagging statements of wages paid to employees in their mills during a week in January, 1921. Two of the mills are located in the North and two in the South. The first two manufacture new bagging, the third makes a specialty of new and old patches, and the fourth concentrates its efforts on reweaving old bagging. These mills with one exception returned the data arranged according to: (1) Classes of workers, (2) sex of workers, and (3) the highest wage, (4) the lowest wage, and (5) the average weekly wages paid to each class of operatives.

The wages paid to corresponding classes of American operatives, as submitted by four domestic mills, and of operatives in a jute mill of Bengal as published by the Indian Government, are as follows:

TABLE 24.—*Weekly wages paid to Indian and American jute operatives.*

Class of workers.	Average wages paid in a jute mill in Bengal, January, 1920.	Average wages paid in American cotton bagging mills in January, 1921.	Class of workers.	Average wages paid in a jute mill in Bengal, January, 1920.	Average wages paid in American cotton bagging mills in January, 1921.
Carder	$0.89	$14.65	Winder	$1.91	$13.60
Rover	1.75	18.60	Weaver	2.84	19.50

The average weekly wages paid to seven classes of workers employed in the Indian jute mill shown in Table 24 amounted to $1.33 per worker in January, 1919, and $1.69 in January, 1920.[38]

The wages paid to American operatives were on the basis of a 48 to 55 hour week. By the terms of the Indian factory act passed in 1912, 12 hours constitute a day's labor. The number of hours actually worked by the Indian operative is between 9 and 10.

The data relating to the wages paid to American and Indian jute operatives would be misleading if used as the basis of comparative labor costs, as the efficiency of the Indian operative is below that of the American. The most authoritative and recent statement regarding the efficiency of Indian labor is to be found in the report of the "Indian Industrial Commission," published in 1919. On the question of the relative efficiency of Indian and western labor and the causes underlying the comparative inefficiency of the former, this

[38] The wages paid to nine classes of operatives in an Indian jute mill, 1900–1920, are shown on p. 77.

report states: "Indian labor in organized industries is much less efficient than the corresponding classes of labor in western countries; and there is evidence to show that in many cases it does not produce as cheaply as western labor in spite of its lower wages. It is true that inferior physique and tropical conditions contribute to this state of affairs; but there is grave reason to believe that the former is to some extent the result of preventable disease, whilst other causes, which are even more obviously remediable, are factors that unnecessarily increase the difficulties of our labor problem.

"All authorities who are qualified to speak on the subject agree that Indian labor is content with a very low standard of comfort. This secured, the Indian workman, generally speaking, takes advantage of the greater earning power given to him by increased wages to do less work, and shows no desire to earn more money by working more regularly or by improving his own efficiency. In the case of Bombay, witnesses have stated that since the 10 per cent rise in the wages of mill operatives given during the rains of 1917, there has been an actual falling off in output." [39]

Through the employment of Scotch overseers, who have had actual experience in Dundee mills, and through the use of the best and most up-to-date machinery, the jute industry is run at a level of efficiency that is very high for India. Calcutta possesses the finest machinery available for making jute products. A number of mills generate their own electric power. As a rule, the mills are self-contained in that they take in the raw material and turn out the finished product in bales.

UNITED KINGDOM.

As compared with the American producer, the Dundee manufacturer has two advantages:

1. The skill which comes from being long established in this field. Dundee's workers are so skilled that her goods are preferred where quality of cloth and weaving are the leading considerations. Notwithstanding India's import duty of 7½ per cent on jute manufactures, the United Kingdom supplied her with fine jute goods valued in the Indian fiscal year, 1920, at $769,469, and in 1921 at $729,566. English goods consisting chiefly of fine bags and canvas, accounted for about 90 per cent of the total in these years; Japan furnished the remainder. India's total imports of jute goods in the prewar year were valued at $843,440.

2. Lower labor costs.

January, 1921, was a period of marked depression in the Scottish jute trade. Employment conditions were very poor. Ninety per cent of the operatives were working on an average of 23 hours per week less than full time. In contrast, in January, 1920, trade was very brisk and there was a shortage of help. Therefore, the wages in the latter period are given.

[39] "Report of the Indian Industrial Commission, 1916–1918," p. 151.

TABLE 25.—*Weekly wages paid jute operatives at Dundee.*[1]

Class of workers.	Week ending Jan. 24, 1920.		Class of workers.	Week ending Jan. 24, 1920.	
	Number of operatives reported.	Average weekly wages.[2]		Number of operatives reported.	Average weekly wages.[2]
Preparers	2,389	$8.61	Weavers	3,459	$8.73
Spinners	2,512	7.74	Others and not specified	1,940	11.94

[1] "Labor Gazette," London, February 1920.
[2] Pound sterling converted to dollars at £=$4.8665.

TARIFF CONSIDERATIONS.

OPINIONS OF TRADE REGARDING DUTY ON BURLAP.

Expressions of opinion regarding changes in duties on burlap show an agreement on the part of trade that such duties, unless very high, would be for revenue purposes only. For instance, an American domestic bag company, with factories in various parts of the country, writing in November 1920, says:

> The question of protection to home industry does not arise, as there is no home industry to protect and there can not well be any. The question of adequacy or inadequacy of the duties, therefore, is to be considered from the standpoint of tariff for revenue only.

This is largely in accord with the position taken by another bag factory with headquarters in the central part of the country. This company, whose output of cotton bags is greatly in excess of those made of burlap, stated its opinion in December, 1920, as follows:

> Concerning the adequacy or inadequacy of duties now in force on burlap, considering the fact that burlap is primarily a raw material imported for the purpose of converting into bags or other products in this county, it seems to us that plain burlaps not processed should, from the standpoint of industrial protection only, be admitted free as at present.

An American manufacturer of linoleum, who during the war erected a mill and produced burlap, is of the opinion that a duty high enough to cover the difference between the costs under American and foreign conditions, would impose a very heavy burden upon all consumers. In this connection, he continues:

> Our impression is that the people of the country as a whole will be served better by having burlap continued on the free list. The only way a duty on burlap might be justified would be as a revenue measure.

DUTY NECESSARY TO PROMOTE DOMESTIC INDUSTRY.

A domestic firm, which manufactures a jute product kindred to burlap, in reporting that it does not manufacture this type of jute cloth, adds:

> * * * There is practically no burlap made in the United States, owing to an inadequate tariff to either foster or protect the industry. Based on present (early 1921) wages and other conditions, we should estimate a duty of about 5 cents per square yard would be needed to establish the burlap industry in this country. Anything less than this would be tariff for revenue.

On December 28, 1921, 40-inch 10½-ounce burlap was being offered wholesale in New York at 5.20 cents per linear yard.

BURLAP AS A SOURCE OF REVENUE.

Imports of burlap in the gray exceed in value imports of any other textile fabric or manufacture. Their value is about equal to the combined value of total imports of countable cotton cloth, and of all the manufactures of wool listed under Schedule K. In the 12 months ended June 30, 1914, imports of burlap were valued at $44,827,000, as compared with $11,523,000 for cotton cloth, and with $33,579,000 for wool fabrics and manufactures entered in the same time. In the calendar year 1920, imports of these items were valued as follows: Burlap, $88,896,000; countable cotton cloth, $44,913,000; and all wool manufactures, $51,433,000.

A duty on burlap has been an important source of revenue in the past. In the years 1897–1913, when this fabric was dutiable, the total revenue obtained from burlap, both specified and nonspecified, showed a marked tendency to increase. Ranging between $2,496,000 in 1899 and $7,676,000 in 1913, the total in these years averaged $4,772,000 annually. In the years 1897–1913 the equivalent ad valorem duty on all classes of burlap averaged 26.75 per cent, while the specific duty was about 1.65 cents per pound, or about 1 cent per linear yard.

The acts of 1899 and 1909 divided imports of burlap, on the basis of weight and thread construction, into three classes. The first class included the burlap commonly used for sacking and baling purposes. The duty imposed on this type by the act of 1897 was five-eighths of 1 cent per pound and 15 per cent ad valorem, and by the act of 1909, nine-sixteenths of 1 cent per pound and 15 per cent ad valorem. The equivalent ad valorem of this compound duty, varying between 29.25 and 21.35, averaged 25.68 per cent. The average value of burlap imported under this heading was 5.95 cents per pound.

The second class embraced burlap of extra light weight and extra fine weave, such as tailors' padding. The duty on this class, under the acts of 1897 and 1909, was seven-eighths of 1 cent per pound and 15 per cent ad valorem. An average of the actual and computed duties levied on this type, ranging between 28.01 and 21.75 per cent, amounted to 24.98 per cent in the period 1897–1913. The average price per pound was 8.51 cents.

The duty on the third class, which related to burlaps not specially provided for, was specifically set at 45 per cent. The average value of imports was 7.07 cents per pound in the years 1905–1913.

The duties collected on the first class of burlap, weighing not less than 6 ounces per square yard and not exceeding 30 threads to the square inch, which classification during the years 1897–1908 was further qualified by the provision "not greater than 60 inches in width," accounted for by far the greater part of the total. Of the whole revenue obtained, that imported under this heading contributed 85 per cent in 1900, 80 per cent in 1905, and 96 per cent in 1910.

Since 1914 imports of burlap have been divided into two classes: (1) Nonprocessed, and (2) processed. [40]

[40] The trade in processed burlap is discussed on pp. 69–74.

A number of firms have offered suggestions as to the amount and type of duty that might be placed on this commodity.

One of the companies which manufactured burlap during the years 1918 and 1919, writes:

* * * As regards the tariff, solely for revenue, a small duty might not be felt when equitably distributed over the great number of users of burlap, and a duty of even one-half cent per yard would probably bring in a revenue of between $3,000,000 and $4,000,000 per annum.

A prominent manufacturer of bags, writing December, 1920, states his opinion as follows:

* * * Assuming the necessity that this commodity should bear its share of the burden for purposes of revenue, we think that the duty should be a specific one of so much per pound, the rate being dependent largely upon the proportion it is decided that this commodity should necessarily bear. We suggest something between a half cent and 1 cent per pound on plain woven fabrics of single jute yarns, by whatever name known, not bleached, dyed, colored, stained, painted, printed, or rendered noninflammable by any process.

One of the largest importers of Dundee and Calcutta burlaps suggests:

We doubt if the trade in general care whether there is any duty or not placed on burlap so long as the duty is reasonable. A very high rate of duty would curtail the consumption in this country somewhat. The simplest form of duty would be a certain fraction of a cent per pound. This would require no record of market prices, etc., which is costly both to the importers and to the Government. In the last tariff, a duty assessed partly on weight and partly on value was used and worked satisfactorily on the whole. It is probably the fairest method.

If a tariff is placed on burlap, it is suggested that the duty on products which consist largely of burlap be increased proportionally.

One of the largest bag manufacturers west of the Rocky Mountains wrote, in December, 1920, as follows:

* * * On any duty that is levied on burlap there should be an additional duty on bags, equivalent to, say, 15 per cent or 1 cent per pound. In other words, if the duty on burlap should be fixed, say, at 15 per cent, then the duty on bags should be 15 per cent, and 15 per cent, or 15 per cent and 1 cent per pound.

TARIFF HISTORY.

TARIFF CLASSIFICATION.

The term "burlap" appeared first in the tariff act of 1824, when it was listed with sailduck, osnaburgs, and ticklenburgs as being dutiable at 15 per cent. The term "burlap" as used in that act is to be considered as designating a coarse cloth of linen or hemp, as the uses of jute previous to 1835 were unknown to all the world but India. It was not until 1846 that jute was mentioned in an American tariff act, when a duty of 25 per cent on raw jute and jute mats, was imposed.

The first reference to burlaps of jute appears in 1861, as follows: "On all brown or bleached linens, ducks, canvas paddings, cot bottoms, burlaps * * * or other manufactures of flax, jute or hemp * * * being of the value of 30 cents or under per square yard, 25 per centum ad valorem; valued above 30 cents per square yard, 30 per centum ad valorem." The duty on each class was increased ten per cent in 1864. Burlap had not then acquired the meaning which it now holds; i. e., plain woven cloth of single jute yarns.

The act of 1872 divided burlaps of flax, jute, and hemp into two classes: (1) burlaps, excepting such as might be suitable for bagging for cotton, dutiable at 30 per cent; (2) oilcloth foundations, or floor cloth canvas, dutiable at 40 per cent. These rates remained in the act of 1883, but a distinction was made by limiting fabrics of the first class to those not exceeding 60 inches in width, and of the second to those in excess of 60 inches.

The second class was eliminated in the act of 1890, which listed burlap not exceeding 60 inches in width, of flax, jute, or hemp, as dutiable at $1\frac{5}{8}$ cents per pound. Other burlaps fell under a general paragraph relating to all manufactures of jute or other vegetable fiber, not specially provided for, which if valued at 5 cents or less per pound, were dutiable at 2 cents per pound; and if valued above 5 cents per pound at 40 per cent ad valorem. As significant that the term "burlap" was becoming more and more limited to cloths made of jute is the paragraph in the act of 1890 levying a duty of 2 cents on "bags for grain made of burlaps."

The act of 1894 combined "burlaps and bags made of burlaps," and made them free of duty.

In contrast, the act of 1897 provided the most detailed classification of burlaps which had yet appeared. The term "burlaps" was no longer used; instead the expression "plain woven fabrics of single jute yarns, by whatever name known" was employed. Such fabrics on the basis of width, weight, and threads per square inch were specifically grouped into two classes: (1) Not exceeding 60 inches in width, weighing not less than 6 ounces per square yard and not exceeding 30 threads to the square inch, counting the warp and filling: (2) Those over 30 and not exceeding 55 threads to the square inch, counting the warp and filling. The duties were levied on a compound basis. The first class were assessed at five-eighths of 1 cent per pound and 15 per cent ad valorem, the second class at seven-eighths of 1 cent per pound and 15 per cent ad valorem. Imports not specifically mentioned, such as the extra-wide burlaps used for linoleum purposes, were dutiable at 45 per cent under the general paragraph relating to manufactures of flax, hemp, jute or vegetable fiber other than cotton.

This classification was reenacted in 1909 with two modifications: (1) An elimination of the words "not exceeding 60 inches in width," which caused imports of extra wide widths, used as the foundation for linoleum and floor cloths, to fall under the first clause of the specific paragraph; and (2) a reduction in the duty to $\frac{9}{16}$ of a cent and 15 per cent ad valorem on goods falling within the scope of the first part of the specific paragraph.

The act of 1913 adopted a new classification on the basis of whether the fabrics are unprocessed or processed. The former class, which describes burlap as taken from the loom, is admitted free; whereas imports of the second class are dutiable under paragraph 279, which levies a duty of 10 per cent on "plain woven fabrics of single jute yarns, by whatever name known, bleached, dyed, colored, stained, painted, printed, or rendered noninflammable by any process."

...ption of jute and of burlap, and production ... for the ... 1917 and 1918.[1]

	1918			1917	Per cent increase 1917–18.
	Total for the year.	Jan. 1–May 31.	June 1–Dec. 31 (estimated.		
[illegible] goods.					
Jute.....pounds	235,261,097	70,637,622	156,622,475	22[illegible]	[illegible]
Raw jute.....do....	142,627,409	57,140,674	85,486,735	15[illegible]	—4.4
Jute cuttings and rejections...do....	89,433,294	13,496,948	69,936,341	7[illegible]	2.3
Manufactures primarily of jute goods.....pounds..	224,404,578	76,571,776	150,832,802	22[illegible]	—
Raw jute.....do....	120,140,491	54,247,691	65,892,800	14[illegible]	— 4.1
Jute cuttings and rejections...do....	89,264,087	19,324,085	69,940,002	7[illegible]	22.9
Other manufactures of jute goods.....pounds..	6,656,521	3,065,946	3,790,577	4[illegible]	— 2.1
Raw jute.....do....	2,667,314	2,892,982	4,794,332	4[illegible]	—38.3
Jute cuttings and rejections...do....	1,168,202	172,965	995,240	1[illegible]	4.1
Burlap.....linear yards..	642,102,352	294,351,735	377,749,617	42[illegible]	2.3
Raw burlap.....do....	377,132,447	142,109,529	239,022,918	25[illegible]	1.9
Burlap cuttings and rejections...do....	267,965,905	119,242,207	148,722,697	25[illegible]	3.4
Manufactures primarily of jute goods.....linear yards..	630,025,427	259,488,777	365,535,648	39[illegible]	1.5
Other manufactures of jute goods.....linear yards..	12,076,925	4,862,958	11,213,970	2[illegible]	—38.3
Bags:					
Bags.....number..	34,124,018	13,737,865	220,418,153	26[illegible]	.3
Burlap bags.....do....	4,357,974	1,607,974	750,000	1,144,[illegible]	
Other bags—					
Raw burlap bags.....do....	18,622,540	6,155,777	114,467,763	17[illegible]	
Jute cuttings and rejections burlap bags.....number..	15,151,537	6,954,129	90,199,400	15[illegible]	

[1] Bureau of War Commodities, 1918. Textile fibers. Department of Commerce. Table 4.

[illegible] estimate. — denotes decrease.

[illegible] figures are withheld to avoid disclosure of individual operations.

TABLE 27.—*Consumption of jute and burlap and production of bags for the 50 leading establishments in the domestic industry, 1917 and 1918.*[1]

	Total (3,473) establishments.	50 leading establishments.		All other (3,423) establishments.
		Amount.	Per cent of total.	
Stocks, June 1, 1918.				
Jute.....pounds..	236,674,422	222,738,200	94.1	13,936,222
Bagging.....do....	108,432,262	42,565,104	39.2	65,867,158
Burlap.....linear yards..	412,461,405	340,689,657	82.6	71,771,748
Bags.....number..	219,089,582	32,037,267	14.6	187,052,315
New.....do....	127,988,975	17,888,323	14.0	110,100,652
Secondhand.....do....	91,100,607	14,148,944	15.5	76,951,663
Consumption in manufacture of jute goods.				
Jute (pounds):				
1918 [2].....do....	233,261,097	219,053,753	93.9	14,207,344
1917.....do....	232,475,670	218,714,073	94.1	13,761,597
Burlap (linear yards):				
1918 [2].....do....	642,101,351	602,791,694	93.9	39,309,657
1917.....do....	621,691,204	561,335,023	90.3	60,356,181
Products. [3]				
Bags (number):				
1918 [2].....do....	344,134,016	312,093,738	90.7	32,040,278
1917.....do....	342,985,634	271,976,180	79.3	71,009,454

[1] Census of war commodities, 1918: Textile fibers, Department of Commerce, Table 9.
[2] Actual consumption for 5 months, estimated requirements for 7 months.
[3] Production of bagging and burlap not shown, to avoid disclosure of individual operations. The leading companies produced all but a small fraction of 1 per cent of the same.

TABLE 28.—*Stocks of burlap in the United States on June 1, 1918.*[1]

	Quantity.	Per cent distribution.	On hand.	In transit.	Afloat.	Owned abroad.
Burlap.....linear yards..	412,461,405	100.0	139,633,799	27,700,366	56,469,592	188,657,648
Under 10-ounce...do....	231,530,568	56.1	85,320,609	14,688,967	32,560,692	98,960,300
10-ounce and over.do....	180,930,837	43.9	54,313,190	13,011,399	23,908,900	89,697,348
Manufactures of jute goods..	320,111,638	77.6	102,727,819	17,743,727	44,649,092	154,991,000
Other consumers, importers and dealers.....	92,349,767	22.4	36,905,980	9,956,639	11,820,500	33,666,648
Six leading States (ranked):						
Massachusetts.....						
New York.....						
Illinois.....	347,107,255	84.2	109,529,109	20,018,106	47,188,692	170,371,348
Missouri.....						
Minnesota.....						
California.....						
All other States.....	65,354,150	15.8	30,104,690	7,682,260	9,280,900	18,286,300

[1] Census of war commodities, 1918: Textile fibers, Department of Commerce, Table 7.

TABLE 29.—*Imports by countries, 1905[1]–1921.*

BURLAP.[2]

Fiscal year.	Imported from—				Total.	
	British India.		United Kingdom.			
	Pounds.	Dollars.	Pounds.	Dollars.	Pounds.	Dollars.
1905	205, 581, 995	10, 609, 355	61, 270, 385	3, 911, 121	269, 067, 189	14, 603, 173
1906	243, 580, 736	14, 597, 770	65, 737, 723	5, 306, 495	311, 118, 257	20, 083, 938
1907	291, 156, 571	22, 562, 082	63, 498, 171	6, 345, 838	356, 549, 685	29, 113, 847
1908	265, 944, 701	19, 145, 529	45, 155, 264	3, 966, 914	311, 785, 529	23, 224, 658
1909	278, 849, 338	15, 656, 723	57, 701, 414	4, 040, 744	337, 163, 051	19, 780, 180
1910	358, 641, 258	17, 164, 851	64, 692, 408	4, 087, 940	425, 506, 992	21, 447, 537
1911	336, 356, 810	16, 797, 449	58, 635, 040	4, 160, 899	396, 550, 776	21, 103, 914
1912	315, 953, 011	20, 066, 039	51, 506, 635	4, 175, 408	368, 397, 867	24, 358, 638
1913	354, 652, 149	31, 118, 939	63, 994, 838	6, 444, 561	420, 599, 029	37, 773, 844
1914[3]	105, 045, 517	9, 016, 780	18, 475, 897	1, 905, 355	124, 576, 025	11, 038, 026
BURLAP, NONPROCESSED.[4]						
1914[5]	322, 872, 348	26, 255, 827	42, 034, 824	4, 472, 122	371, 285, 218	31, 382, 938
1915	353, 652, 749	23, 665, 484	42, 883, 413	4, 207, 121	397, 355, 965	27, 946, 708
1916	334, 476, 503	28, 006, 977	45, 847, 839	6, 045, 511	382, 438, 713	34, 227, 198
1917	374, 581, 388	37, 385, 707	60, 017, 200	9, 732, 485	446, 282, 193	48, 296, 408
1918	411, 881, 074	52, 705, 948	29, 175, 145	5, 772, 478	442, 385, 153	58, 789, 448
1919	392, 980, 923	68, 110, 690	12, 180, 376	3, 559, 637	408, 957, 174	72, 396, 228
1920	482, 932, 925	73, 730, 640	53, 402, 830	13, 344, 105	541, 113, 614	88, 020, 088
1921	497, 668, 374	55, 629, 481	33, 753, 936	7, 322, 167	537, 034, 044	68, 086, 598
1921 (calendar year)	444, 669, 569	36, 561, 420	26, 064, 594	4, 259, 821	474, 168, 221	41, 279, 072

[1] Quantity of imports according to countries were first recorded in the fiscal year 1905.
[2] Burlaps, or plain woven fabrics, of single jute yarn.
[3] From July 1 to Oct. 3, 1913, inclusive.
[4] Burlaps or plain woven fabrics of single jute yarns not bleached, colored, etc.
[5] From Oct. 4, 1913, to June 30, 1914, inclusive.

TABLE 30.—*Imports for consumption—Revenue, 1895–1921.*

BURLAP.[1]

Fiscal year.	Quantity.	Value.	Duty collected.	Value in cents.	Actual and computed ad valorem rate.	Actual and computed specific duty in cents.
	Sq. yds.			*Per sq. yd.*		
1895[2]	205, 443, 721	$5, 722, 533	Free.	2.8	Free.	
1896	228, 590, 514	6, 448, 539	Free.	2.8	Free.	
1897	324, 470, 863	9, 245, 057	Free.	2.8	Free.	
1898	18, 795, 237	489, 412	Free.	2.6	Free.	
	Pounds.			*Per pound.*	*Per cent.*	*Per pound*
1898[3]	117, 151, 938	5, 795, 106	$1, 745, 949	4.9	30.13	1.
1899	169, 136, 016	8, 188, 186	2, 506, 757	4.9	30.61	1.
1900	190, 352, 684	10, 425, 028	2, 963, 324	5.8	28.43	1.
1901	205, 455, 397	12, 190, 488	3, 374, 673	5.9	27.68	1.
1902	241, 480, 394	14, 307, 119	3, 965, 406	5.9	27.72	1.
1903	254, 019, 461	14, 156, 144	4, 061, 122	5.6	28.69	1.
1904	268, 033, 050	14, 451, 007	4, 113, 498	5.4	28.47	1.
1905	271, 361, 445	14, 795, 447	4, 243, 399	5.4	28.68	1.
1906	317, 065, 281	20, 237, 712	5, 515, 137	6.4	27.25	1.
1907	352, 877, 479	28, 822, 630	7, 270, 471	8.2	25.22	2.
1908	311, 463, 590	23, 187, 861	5, 841, 535	7.4	25.19	1.
1909	310, 584, 929	18, 420, 268	5, 102, 062	5.9	27.70	1.
1910	431, 919, 388	21, 970, 091	5, 807, 917	5.1	26.44	1.
1911	379, 300, 149	20, 285, 597	5, 212, 878	5.3	25.70	1.
1912	403, 158, 124	25, 845, 785	6, 181, 779	6.4	23.92	1.
1913	402, 960, 245	35, 811, 465	7, 676, 475	8.9	21.44	1.
1914[4]	92, 645, 152	8, 044, 180	1, 734, 722	8.7	21.56	1.

[1] Includes all burlaps, specified and nonspecified, 1895–1914.
[2] In 1894–1894 burlaps fell under the classification: "Burlaps not exceeding 60 inches in width of flax jute or hemp," etc.
[3] From July 25, 1897, to June 30, 1898, inclusive.
[4] From July 1, 1913, to Oct. 3, 1913, inclusive.

TABLE 30.—*Imports for consumption, [illegible] (Continued*

BURLAP, NONSPECIFIED[1]

Fiscal year.	Quantity.	Value.	Per square yard	Ad valorem equivalent	Specific and ad valorem equivalent	Compound duty
				Per cent	Per cent	Per cent
1914	431,669,733	$20,457,224	Free	4.7	Free	Free
1915	398,462,600	17,[illegible]	Free	4.3	Free	Free
1916	262,344,177	13,[illegible]	Free	5.1	Free	Free
1917	446,003,740	20,[illegible]	Free	4.5	Free	Free
1918	442,[illegible]	24,[illegible]	Free	5.4	Free	Free
1919	454,[illegible]	22,[illegible]	Free	4.8	Free	Free
1920	342,[illegible]	20,[illegible]	Free	6.1	Free	Free
1921	326,304,427	14,[illegible]	Free	4.4	Free	Free
1921 calendar year	474,[illegible]	[illegible]	Free	4.[illegible]	Free	Free

[1] Burlaps, not bleached, dyed, etc.

[2] From Jan. 1, 1914.

TABLE 31.—*Revenue, by classes, from [illegible]*

Fiscal year.	Not exceeding 40 inches in width, weighing not more than 6 ounces per square yard, and not counting more than 32 single warp threads to the square inch, and not exceeding 6 inches in width, if not over 20 per cent ad valorem.	Weighing not more than 6 ounces per square yard, and counting more than 32 single warp threads to the square inch, and not exceeding 40 inches in width, if not over 20 per cent ad valorem.	All others, if not over 20 per cent ad valorem.	Total revenue.
1894[1]	$1,095,830	$41,471	$708,548	$1,745,849
1895	2,[illegible]56	83,[illegible]52	800,488	2,406,767
1896	2,444,[illegible]82	138,[illegible]39	140,[illegible]07	2,[illegible]24
1897	2,[illegible]66,869	127,[illegible]63	150,[illegible]41	3,374,673
1898	1,[illegible]73,[illegible]75	137,[illegible]80	158,[illegible]41	3,[illegible]96
1899	1,[illegible]39,[illegible]61	134,[illegible]61	490,[illegible]38	4,[illegible]31
1900	3,[illegible]48,[illegible]15	147,[illegible]12	156,[illegible]71	4,[illegible]98
1901	3,[illegible]51,[illegible]13	144,[illegible]99	954,[illegible]74	5,[illegible]99
1902	4,[illegible]66,[illegible]57	127,[illegible]76	[illegible],[illegible]47	6,[illegible]47
1903	5,[illegible]29,[illegible]96	17,[illegible]08	1,[illegible]13[illegible]	7,[illegible]71
1904	4,[illegible]87,[illegible]73	503,[illegible]74	[illegible],[illegible]91	5,[illegible]38
1905	4,[illegible]56,[illegible]81	70,[illegible]91	577,[illegible]86	5,[illegible]82
1906	456,[illegible]91	118,[illegible]87	100,[illegible]17	5,[illegible]97
1907[2]	[illegible],[illegible]73	[illegible]	[illegible]	[illegible]
1908	5,[illegible]05,[illegible]71	171,[illegible]03	14,[illegible]71	[illegible],[illegible]78
1909	5,[illegible]86,[illegible]12	155,[illegible]80	99,[illegible]87	6,[illegible]79
1910	7,[illegible]8[illegible],[illegible]68	155,[illegible]14	89,[illegible]08	7,[illegible]75
1911	1,[illegible]82,[illegible]18	45,[illegible]73	1,[illegible]07	1,[illegible]72
1912	[illegible]	[illegible]	[illegible]	[illegible]
Annual average[3]	3,173,251	132,410	468,979	3,774,643

[1] Provision regarding "60 inches in width" eliminated by the act of 1909.
[2] Duty changed to nine-sixteenths of 1 cent per pound and 15 per cent ad valorem by the act of 1909.
[3] From July 25, 1897 to June 30, 1898, inclusive.
[4] From Aug. 5, 1909 to June 30, 1910, inclusive.
[5] July 1, 1913 to Oct. 3, 1913, inclusive.
[6] Average of 16½ years.

TABLE 32.—*Prices of burlap, 40-inch, 10½-ounce, wholesale, at Calcutta, 1890–1922, in cents per linear yard (rupee = $0.3244).*

[Data from "Prices and wages," 1920, Table No. 7, Department of Statistics, India.]

Year.	January.	July.	Year.	January.	July.
1873 [1]	3.56	.....	1907	4.61	4.79
1890	3.56	3.32	1908	4.34	4.61
1891	3.64	2.75	1909	4.24	4.61
1892	3.56	2.91	1910	4.65	4.81
1893	3.65	3.06	1911	4.24	4.31
1894	3.56	3.49	1912	4.64	4.44
1895	3.44	3.56	1913	5.67	5.53
1896	3.48	3.36	1914	5.33	4.37
1897	3.24	3.09	1915	4.32	4.12
1898	2.61	2.51	1916	4.24	5.32
1899	2.71	2.91	1917	5.67	5.65
1900	3.48	3.36	1918	15.20	24.32
1901	3.56	3.51	1919	6.81	6.85
1902	3.16	3.16	1920	6.85	[2] 6.12
1903	3.08	3.24	1921	[3] 4.25	[4] 4.32
1904	3.20	3.20	1921	[4] 4.70	[5] 5.25
1905	3.20	3.60	1921 [7]	4.61	.....
1906	3.77	4.56	1922 [8]	4.72	.....

[1] March, 1873.
[2] Calcutta price as quoted in Dundee Prices Current of July 21, 1921.
[3] Ibid., Jan. 12, 1921.
[4] Ibid., May 11, 1921.
[5] Ibid., Aug. 3, 1921.
[6] Ibid., Sept. 11, 1921.
[7] Ibid., Dec. 21, 1921.
[8] Ibid., Feb. 15, 1922.

TABLE 33.—*Prices (wholesale) of leading jute cloths, at Dundee, per linear yard (penny = $0.02), 1890–1922.*

[Data from Dundee Prices Current and Trade Report, Dundee.]

Jan. 1.	40 inches,[1] 10½ ounces.	40 inches,[1] 8 ounces.	74 inches, 10 porter, 10 ounces, floor cloth.	45 inches, 11 porter, 20 ounces, tarpaulin.	Jan. 1.	40 inches,[1] 10½ ounces.	40 inches,[1] 8 ounces.	74 inches, 10 porter, 10 ounces, floor cloth.	45 inches, 11 porter, 20 ounces, tarpaulin.
	Cents.	*Cents.*	*Cents.*	*Cents.*		*Cents.*	*Cents.*	*Cents.*	*Cents.*
1899	3.46	3.22	3.39	7.10	1911	4.31	4.38	4.57	8.25
1900	4.31	3.91	4.57	8.25	1912	4.73	4.26	4.73	8.77
1901	4.06	4.78	4.14	7.62	1913	6.84	6.26	6.84	11.81
1902	3.56	3.39	3.56	6.84	1914	7.00	6.04	7.08	13.02
1903	3.69	3.39	3.78	6.84	1915	5.24	4.62	5.00	16.74
1904	3.69	3.56	3.73	4.81	1916	9.38	8.00	9.20	17.00
1905	3.78	3.69	4.57	7.34	1917	10.62	9.00	[2] 21.00	18.00
1906	4.71	4.31	5.07	8.87	1918	20.00	17.00	18.50	29.50
1907	4.45	5.72	7.10	11.90	1919	18.50	14.66	[3] 34.50	35.50
1908	4.81	4.31	4.81	9.29	1920	21.50	16.75	[3] 42.00	38.00
1909	4.06	3.69	4.06	7.75	1921	10.75	8.00	22.00	23.00
1910	4.23	3.88	2.30	7.26	1922 [4]	7.80	5.80	[3] 17.00	15.50

[1] Packed.
[2] 76 inches, 10 porter, 9½ ounces, floor cloth.
[3] Dec. 21, 1921.

TABLE 34.—*Prices of burlap at New York, carload lots, 50 bales to the car, per linear yard spot goods.*

[Data from James Scott & Sons, New York City.]

	1918		1919		1920		1921.	
	40 inches, 8 ounces.	40 inches, 10½ ounces.	40 inches, 8 ounces.	40 inches, 10½ ounces.	40 inches, 8 ounces.	40 inches, 10½ ounces.	40 inches, 8 ounces.	40 inches, 10½ ounces.
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
January	16.95	24.60	8.85	13.85	11.65	17.10	4.90	5.75
February	[1]	[1]	8.35	12.50	12.15	17.25	4.75	5.50
March	[1]	[1]	6.35	9.00	11.25	16.75	4.75	5.25
April	[1]	[1]	6.25	8.25	9.50	14.35	4.40	[4] 4.80
May	19.60	24.60	9.60	11.40	10.25	13.75	[2]	[2]
June	18.75	23.75	10.60	12.00	8.40	10.50	[2]	[2]
July	19.15	24.50	11.85	13.25	8.25	11.00	[2]	[2]
August	19.15	24.75	16.15	18.00	8.10	11.50	[2]	[2]
September	17.85	22.35	15.50	17.35	8.10	10.45	.....	.....
October	14.85	17.35	13.75	17.90	7.20	9.25	[3] 4.50	[3] 6.00
November	[1]	[1]	14.00	18.00	5.75	7.75	.....	.....
December	[1]	[1]	11.60	17.15	5.40	6.50	[4] 4.30	[4] 5.20

[1] Very little stock carried.
[2] Price lists temporarily discontinued.
[3] For delivery in November, 1921–January, 1922.
[4] Dec. 28, 1921.

TABLE 35.—*Prices (wholesale) of jute cloths, per linear yard, at Dundee, 1921.*

[Data from Commerce Reports, Feb. 11, 1921.]

Kinds or grades.	Cents.	Kinds or grades.	Cents.
Hessian, 40 inches, 10½ ounces	10¼–10½	Mangled Hessians, 40 inches, 10½ ounces	10¾
Hessian, 40 inches, 10 ounces	9½– 9¾	Floorcloth, 76 inches, 9½ ounces	23
Hessian, 40 inches, 9½ ounces	9 – 9½	D. W. bagging, 36 inches, 16 ounces	14½–15
Hessian, 40 inches, 9 ounces	8¾– 8¾	Twilled sacking, 27 inches, 16 ounces	14¾–15½
Hessian, 40 inches, 8½ ounces	8 – 8½	Twilled sacking, 20 inches, 20 ounces	19½
Hessian, 40 inches, 8 ounces	7½– 7¾	Twilled sacking, 28 inches, 20 ounces (fine)	22½–23
Hessian, 40 inches, 72 ounces	7 – 7¼	Tarpaulin, 45 inches, 20 ounces	22½
Hessian, 40 inches, 7 ounces	6½– 6¾	Brattice D. W., 36 inches, 11 ounces	12½–13
Hessian, 40 inches, 6½ ounces	6¼	Brattice twilled, 36 inches, 11 ounces	13 –13¼
Hessian, 40 inches, 6 ounces	5¾		

TABLE 36.—*Constructions, foreign manufacturers' prices and net wholesale selling prices at New York, of tailors' paddings, 1914, 1921, and 1922.*

Country of origin.	Fiber content.		Weight (ounces per square yard).	Yarn number.		Threads per inch.		Foreign manufacturers' net selling price, in cents per square yard.			Wholesale net selling price at New York in cents per square yard in February, 1922.
	Warp.	Filling.		Warp.	Filling.	Warp.	Filling.	In early 1914.[1]	In March, 1921.[2]	In February, 1922.[3]	
Scotland	Jute	Jute	7.9	[4] 5.1	[4] 4.6	20	21	9.09	16.30	13.51	16.5
Belgium	Cotton	...do	7.1	12.5	[4] 4.3	31	36	9.21	18.08	15.71	25.0
Scotland	...do	...do	6.6	13.5	[4] 3.9	31	29	9.92	13.88	13.91	22.7
Do	Flax	...do	9.8	17.3	[4] 4.4	31	34	13.20	32.88	.....	.....
Belgium	...do	...do	9.0	15.9	[4] 3.6	31	36	11.85	25.90	22.43	34.9
Do	...do	Flax	7.6	20.7	21.9	37	41	13.93	33.22	28.36	39.4
Do	...do	...do	5.5	31.9	33.9	49	48	13.50	30.24	33.03	48.7
Ireland	...do	...do	6.6	29.2	27.2	48	42	13.70	37.75	31.90	43.1

[1] Pound sterling=$4.8665; franc, $0.193.
[2] Pound sterling—$3.90; franc, $0.0724.
[3] Pound sterling, $4.287; franc, $0.0795.
[4] Pound.

TABLE 37.—*Constructions and wholesale selling prices of tailors' paddings at New York.*

Country of origin.	Fiber content.		Weight (ounces per square yard).	Threads per inch.		Selling prices, at New York, in cents per square yard.	
	Warp.	Filling.		Warp.	Filling.	In early 1914.	In March, 1921.
Scotland	Jute	Jute	10.2	20	23	14.67	18.74
Do	do	do	7.25	25	25	14.67	18.25
Do	do	do	7.3	18	25	9.78	11.81
Do	Cotton	do	6.8	33	27	15.48	18.33
Belgium	do	do	8.9	35	45	22.05	26.08
Do	Flax	Flax	7.4	42	41	30.00	44.25
Ireland	do	do	5.9	57	46	30.00	45.00

TABLE 38.—*Constructions, foreign manufacturers' prices, and landed prices at New York of tailors' paddings in 1914, 1920, and 1921.*

Country of origin.	Fiber content.		Weight (ounces per square yard).	Yarn number.		Threads per inch.		Foreign manufacturers' selling price, in cents per square yard.			Landed price in cents per square yard at New York, October, 1921.
	Warp.	Filling.		Warp.	Filling.	Warp.	Filling.	July, 1914.[1]	May, 1920.[2]	October, 1921.[3]	
Belgium	Jute	Jute	7.3	5.1	4.1	19	22	0.100	.....	0.105	11.62
Do	do	do	10.1	5.0	4.7	22	27	New.	New.	.145	16.18
Do	Cotton	do	5.6	10.8	3.6	31	27	New.	New.	.110	15.79
Do	do	do	9.5	17.0	3.6	35	45	New.	New.	.151	21.61
Ireland	Flax	Flax	4.9	32.7	19.2	32	30	New.	0.632	.257	34.43
Do	do	do	5.0	29.4	23.5	32	37	New.	.680	.263	36.27
Do	do	do	5.6	24.1	18.5	32	26	New.	.602	.232	32.05
Do	do	do	5.9	24.4	22.7	38	34	.129	.787	.293	40.50
Do	do	do	6.3	28.2	28.4	45	44	.162	1.098	.306	42.18
Do	do	do	6.9	23.2	34.6	57	40	.167	1.240	.324	44.70
Do	do	do	6.7	23.6	35.2	57	40	.174	1.252	.330	45.55
Do	do	do	7.0	24.3	27.7	51	37	.151	1.038	.287	39.64

[1] 1d.=2.02 cents; 1 franc=19.3 cents. [2] 1d.=1.59 cents. [3] 1d.=1.63 cents; 1 franc=7.1 cents.

Rates of duty on burlap,[1] 1883–1913.

Act of—	Paragraph	Tariff classification or description.	Rates of duty, specific, and ad valorem.
1883	338	Burlaps, not exceeding 60 inches in width, of flax, jute, or hemp, or of which flax, jute, hemp, or either of them, shall be the component material of chief value (except such as may be suitable for bagging for cotton).	30 per cent ad valorem.
	334	Brown and bleached linens, ducks, canvas, paddings, cot bottoms, diapers, crash, huckabacks, * * * lawns, or other manufactures of flax, jute, or hemp, or of which flax, jute, or hemp shall be the component material of chief value, not specially enumerated or provided for in this act.	35 per cent ad valorem.
1890	364	Burlaps, not exceeding 60 inches in width, of flax, jute, or hemp, or of which flax, jute, or hemp, or either of them, shall be the component material of chief value (except such as may be suitable for bagging for cotton).	1⅛ cents per pound.
	374	All manufactures of jute, or other vegetable fiber, except flax, hemp, or cotton, or of which jute, or other vegetable fiber, except flax, hemp, or cotton is the component material of chief value, not specially provided for in this act, valued at 5 cents per pound or less	2 cents per pound.
		Valued above 5 cents per pound	40 per cent ad valorem.

[1] The act of 1913 first makes a distinction between processed and nonprocessed burlap.

Rates of duty on burlap, 1883–1913—Continued.

Act of—	Paragraph	Tariff classification or description.	Rates of duty, specific and ad valorem.
1894	424½	Burlaps and bags for grain made of burlaps	Free.
1897	341	Plain woven fabrics of single jute yarns, by whatever name known, not exceeding 60 inches in width, weighing not less than 6 ounces per square yard and not exceeding 30 threads to the square inch, counting the warp and filling.	⅛ of 1 cent per pound and 15 per cent ad valorem.
		If exceeding 30 and not exceeding 55 threads to the square inch, counting the warp and filling.	¼ of 1 cent per pound and 15 per cent ad valorem.
1897	347	All manufactures of flax, hemp, ramie, or other vegetable fiber, of which these substances, or either of them, is the component material of chief value, not specially provided for in this act.	45 per cent ad valorem.
1909	352	Plain woven fabrics of single jute yarns, by whatever name known, weighing not less than 6 ounces per square yard, and not exceeding 30 threads to the square inch, counting warp and filling.	1/16 of 1 cent per pound and 15 per cent ad valorem.
		If exceeding 30 and not exceeding 55 threads to the square inch, counting the warp and filling.	¼ of 1 cent per pound and 15 per cent ad valorem.
	358	All woven articles, finished or unfinished, and all manufactures of flax, hemp, ramie, or other vegetable fiber, or of which these substances, or any of them, is the component material of chief value, not specially provided for in this section.	45 per cent ad valorem.
1913	408	* * * plain woven fabrics of single jute yarns by whatever name known, not bleached, dyed, colored, stained, printed, or rendered noninflammable by any process. * * *	Free.

Court and Treasury Decisions.

Jute canvas with a *double warp and single filling*, each of single jute yarn, but which was *not twilled or figured* in any manner in the process of weaving, was held to be a plain woven fabric. (99 Fed., 262, of 1900.) Fabrics known as monks' cloth, woven with both a *double warp and a double weft*, from jute yarns not advanced beyond the condition of singles, were also held to be plain woven fabrics of single jute yarns. (G. A. 5269, T. D. 24191, of 1903.) *Merchandise designated as twilled burlaps of single jute yarns*, woven in such a manner as to present a twilled effect, are not plain woven fabrics of single jute yarns. The term "*plain woven*" means plain as distinguished from twilled or figured effects produced in the process of weaving. (G. A. 5035, T. D. 23386, of 1901, applying 99 Fed., 262, and G. A. 4785, T. D. 22560, of 1900.)

A plain-woven cloth, composed of jute yarns advanced beyond the condition of singles, *by grouping or twisting three or more single yarns together*, is not within the provision for fabrics of single jute yarns. (G. A. 5035, T. D. 23386, of 1901.) In G. A. 5269, T. D. 24191, of 1903, it is stated that the grouping spoken of in the last cited case does not refer to the grouping of the threads or yarns in the process of weaving, but to the assembling and twisting together of strands or small yarns in making coarser yarns, or yarns advanced beyond the condition of singles. In G. A. 5135, T. D. 23719, of 1902, it is indicated that a fabric of two or more single yarns grouped or twisted together would be removed from the provision.

The term "*printed*" as used in paragraph 408 of the act of 1913 applies only to such printing as affects the character or condition of the woven fabrics as such, whether by way of ornamentation or exploitation or like purpose. *The conspicuous stenciling* of the consignee's name upon a fabric for purposes of temporary identification does not make it a printed fabric. (Texas & Pacific Railway Co. *v.*

United States, 7 Ct. Cust. Appls., 328, of 1916, reversing G. A. 7888, T. D. 36342.

Plain woven jute fabrics cut up into pieces 26 inches in length, used for covering plants, with a selvedge on the sides, but the other edges rough and unfinished just as they were cut from the bolt, were held to be plain woven fabrics under paragraph 408 and not manufactures of vegetable fiber under paragraph 284 of the act of 1913. G. A. 8026, T. D. 37001, of 1917. *Merchandise returned as plain woven fabrics of single jute* yarns rendered noninflammable, found to be imported in bales and *shipped to a fireproof plant in the United States*, immediately upon delivery, where it was rendered noninflammable, and used in ventilating systems in coal mines, was held free of duty under this paragraph. The analyst reported that the material is inflammable. Abstract 39058, of 1916. *Jute thread waste*, the short broken warp ends of the jute thread used in the manufacture of burlap cloth, was held to be a thread waste and dutiable as a waste not specially provided for under paragraph 384 rather than free of duty under this paragraph. Waste, under this paragraph, must be a waste of bagging, gunny cloth, or similar woven fabric. United States v. Crumpton, 6 Ct. Cust. Appls., 197, of 1915. *Jute headings*, which are the ends cut off when a piece of woven jute fabric is taken from the loom and which consist of pieces of the fabric varying in width from one inch to a foot, to which are hanging the ends of the warp or yarn used in the weaving, are free under paragraph 408 as waste of plain woven fabrics of single jute yarn rather than dutiable under paragraph 384. G. A. 8581, T. D. 37113, of 1917. *Jute paid* of a plain woven fabric of cotton and jute, with jute in chief value, and used as interlining in coats, was held properly classified as a manufacture of vegetable fiber under paragraph 284 of the act of 1913 rather than exempt from duty under this paragraph as a plain woven fabric of single jute yarns. G. A. 8124, T. D. 37492; followed in Abstract 42975, which was affirmed: Simiansky v. United States, 5 Ct. Cust. Appls., 288, of 1914.

PART III.

PROCESSED BURLAP.

Description and Uses.

Paragraph 279 of the act of 1913 deals with plain woven fabrics, of single jute yarns which have been bleached, dyed, colored, stained, painted, printed, or rendered noninflammable.

Jute fabrics are processed for a wide variety of purposes; they are bleached and dyed for upholstery and for tapestry; they are colored for horse clothing and for packing hams; and are rendered noninflammable for use in mines.

All processed jute fabrics do not fall under the provisions of paragraph 279. Waterproofed fabrics with jute as chief value, such as tarpaulins, are dutiable under paragraph 254 at 25 per cent. Narrow woven jute fabrics, known as webbing and used in making belts, bands, etc., are assessed at 25 per cent under paragraph 202.[1]

Jute may be combined with cotton or flax to make actors' suits, tailors' padding, antique canvas, etc. Such cloths having jute as the constituent of chief value, processed or nonprocessed, pay a duty of 35 per cent under paragraph 284. Jute cloths woven with a twill, or made from plied yarns, either in the grey or treated states, are also included under paragraph 284.

Jute cloths used as wall coverings constitute the bulk of the fabrics falling under the description of "bleached, dyed, colored, stained, painted, printed;" brattice cloth is the main fabric under "rendered noninflammable by any process."

Brattice cloth, which is heavy coarse jute or cotton fabric treated with oils and mineral matter to preserve the cloth from decay and to render it noninflammable, is used for ventilation and for fire protection purposes in coal mines. The leading jute fabrics used in making brattice cloth are:[2]

Hessian, weighing 12 ounces to the square yard.
Hessian, weighing 16 ounces to the square yard.
Tarpaulin, weighing 16 ounces to the square yard.
Double warp bagging, weighing 20 ounces to the square yard.

The most satisfactory jute brattice cloth is made from fabrics specially woven, cropped, and mangled—run through heavy rollers to give the cloth a finished glazed appearance.

SUBSTITUTES FOR JUTE BRATTICE.

Cotton duck, ranging in weight from 8 to 12 ounces to the square yard is commonly used as the basis of cotton brattice cloth. The widths of the converted jute and cotton cloths range from 36 to 96 inches.

[1] Webbings are described on p. 36.
[2] These fabrics are described on pp. 33, 34.

Brattice cloth of jute is interchangeable with that made of cotton. A domestic manufacturer, whose production of cotton brattice in 1920 was twice as great as that of jute, writing in June, 1921, states: "The preference of the great majority of the mine operators is for cotton brattice, but the price is twice as high per square yard as that on jute, and the business is gradually drifting back to the jute brattice; although the cotton brattice, properly treated, has a longer life, and is preferred by the coal-mining interests, it is hardly possible to compete with the jute brattice on account of the great difference in price * * *."

Domestic Production.

The domestic production of jute brattice cloth made marked advances during the years 1914–1920. The output in 1920 was an increase of 70 per cent over that of 1918. The figures for 1914–1917 are not published because of the few firms then specializing in this line. In contrast, the amount of cotton duck converted in 1920 was 50 per cent less than in 1918.

Table 39.—*Domestic production of jute and cotton brattice cloth, 1918–1920.*

Year.	Jute.	Cotton.
	Square yards.	*Square yards.*
1918	1,982,500	1,825,936
1919	2,169,404	705,734
1920	3,380,826	832,364

On the basis of information furnished by a manufacturer, who converts both jute and cotton cloths, the value of the domestic production of jute brattice is estimated, in 1918 at $793,000, in 1919 at $759,000, and in 1920 at $899,000; and cotton brattice, $1,369,000, $458,000, and $370,000, respectively.

There were five plants in 1920 converting jute and cotton cloths for use in mines. Three of these were located in Chicago, and one each in Brooklyn and Pittsburgh. Three of these were specializing in jute brattice, and two in cotton. Only one was not making both types.

Drapery burlaps, classified in the census as upholstery materials, are not shown separately.

EXPORTS.

Official statistics divide exports into two classes, (1) domestic products or manufactures, and (2) commodities of foreign origin, changed from the form in which they were imported or enhanced in value by further manufacture in the United States. Articles of the second class are known as "Articles exported with the benefit of drawback," because upon exportation the importer of the foreign materials used in their manufacture is entitled to a refund of 99 per cent of the duties originally paid.

Statistics relating to our exports of processed jute cloths are limited to the second class. Such statistics, which are available under a number of different classifications, do not show the countries to which the goods are exported.

The amount of [illegible] consumed in the manufacture of articles so exported during the twelve months to [illegible] was based on the [illegible] was about [illegible] per cent of our total imports. In the interval [illegible] used in articles exported with drawback ranged between a minimum of [illegible] pounds in [illegible] and a maximum of [illegible] in [illegible]. The [illegible] such [illegible] was [illegible] in number in [illegible] and in the years [illegible] and [illegible] in [illegible]. The number of bags exported [illegible] in [illegible] in [illegible].

A classification was begun in [illegible] showing the [illegible] of various exports. In the following six years the number of bags shipped was a steady increase ranging between [illegible] bags in [illegible] and [illegible] bags in [illegible]. From [illegible] bags in [illegible] bags shipped in [illegible] the number [illegible] bags in [illegible] when this export classification was [illegible]. During the seven years [illegible] the amount of [illegible] imported in [illegible] and similar materials for grinding exported with drawback averaged [illegible] pounds to [illegible] pounds.

The position of the American exporter of [illegible] may be judged by the imports to Canada. A study of Canada's import trade shows that the American manufacturer [illegible] disadvantage as compared with the United Kingdom. The preferential tariff rate given to [illegible] goods is [illegible] greater percentage.

[illegible] normally supplies Canada with [illegible] of the [illegible] of the entire [illegible] Canadian market [illegible] [illegible] manufacturers [illegible] [illegible] per cent ad valorem and [illegible] per cent duty and Canada is entitled [illegible] per cent of the British [illegible] In the period [illegible] while [illegible] imports of this type of [illegible] [illegible] and [illegible] [illegible] [illegible] respectively. British [illegible] [illegible] [illegible] [illegible] per cent and [illegible] per cent in the second [illegible] per cent and [illegible] per cent. [illegible] the imports were [illegible] [illegible] [illegible] [illegible] per cent, the United Kingdom [illegible] per cent and the [illegible] per cent.

Canada's imports of [illegible] [illegible] [illegible] and [illegible] carpets, rugs, matting, and mats are negligible.

In [illegible] the exports of [illegible] manufactures to Canada, [illegible] specially enumerated, ranged in value between $[illegible] and $[illegible] as compared with $[illegible] and $[illegible] [illegible] [illegible] On this class of goods English manufacturers [illegible] [illegible] and the American 25 per cent.

Foreign Possessions.

Trade statistics of the United Kingdom and [illegible] which furnish all but a very small [illegible] [illegible] processed jute cloths do not appear separately [illegible] which have been dyed, stained, or printed [illegible]

IMPORTS.

Imports into the United States of plain-woven processed jute cloths are small compared with the domestic production of burlap received in the gray—as taken from the loom—and treated by domestic processes.

Imports for consumption under paragraph 279 averaged in the fiscal years 1914–1921 2,092,244 pounds, with a value of $258,637. Shipments were largest in the period October, 1913–June, 1914, when they were 3,768,108 pounds, valued at $345,697. Imports in the years 1915–1921, ranged between 1,140,362 pounds in 1918 and 2,193,896 pounds in 1919.[3] These figures relate only to imports of plain-woven fabrics of all jute. Shipments of processed twilled cloths, or of cloths composed in part of jute, which fall under paragraph 285, are not separately classified.

Brattice cloth constitutes the bulk of imports under paragraph 279. Noninflammable cloth made from twilled sacking is also entered and pays a duty of 35 per cent under paragraph 284. Burlap, which has been bleached or colored for buckram, or dyed red and used for horse blankets or clothing, is imported in negligible quantities.

As in the case of imported plain burlap and bags, the domestic consumption of foreign processed burlap is supplied by the United Kingdom and British East India, the former supplying two-thirds of the total quantity. In the periods 1915–1919[4] and 1919–20 shipments from the United Kingdom constituted 64.4 per cent and 66.9 per cent; and those from India 24.6 and 30.4 per cent, respectively. During the fiscal year ended June 30, 1921, the respective percentages were 72.90 for the United Kingdom and 25.07 for India.

Plain burlap from Dundee costs more than the processed article, whereas in India the article rendered noninflammable commands, as a rule, the higher price.

TABLE 40.—*Prices of imported burlap, plain and processed, 1915–1921.*[1]

[In cents per pound.]

Fiscal year.	Plain burlap.		Processed burlap.	
	United Kingdom.	British India.	United Kingdom.	British India.
1915	9.81	6.69	8.53	6.75
1916	13.19	8.37	10.61	8.74
1917	16.22	9.98	11.70	.....
1918	19.79	12.80	14.61	18.80
1919	21.01	17.33	21.18	11.78
1920	24.99	15.27	20.57	13.19
1921	21.69	11.17	15.85	13.62

[1] The prices of jute cloths rendered noninflammable (brattice cloth) in the United States are given on p. 67.

The higher price of the plain cloth from the United Kingdom is due to the fact that the nonprocessed burlap is superior in quality to that used as the foundation for brattice cloth. Jute paddings and linoleum burlap, which make up the bulk of the English hessian

[3] Imports of processed burlap, in the calendar year 1921, were 1,016,418 pounds, valued at $105,263.
[4] Imports of processed burlap by countries are first available for 1915.

consumed in the United States, sell for considerably more than the same weight of tarpaulin or double-warp bagging, which are the types of burlap commonly employed as the basis of brattice cloth.

COMPETITIVE CONDITIONS.

The American producer of jute brattice cloth, draperies, or other articles that have burlap as a basis, pays more for his labor than his British competitors. Wages paid in the United States, the United Kingdom, and in British India, are compared in the discussion of the domestic trade in nonprocessed burlap. In Dundee the converting processes are carried on by establishments which are independent of jute mills, and which make a specialty of bleaching, dyeing, and processing cloth.

TABLE 41.—*Processed burlap*[1]*—Imports by countries, 1915–1921.*

Fiscal year.[1]	Imported from—				Total.	
	United Kingdom.		British India.		Pounds.	Dollars.
	Pounds.	Dollars.	Pounds.	Dollars.		
1915	1,305,898	111,390	456,982	30,823	1,767,676	142,795
1916	1,573,445	167,018	293,126	25,615	1,871,578	194,095
1917	1,825,796	213,646	.....	.....	1,902,293	222,514
1918	1,131,714	165,326	250,000	47,000	1,430,952	219,674
1919	96,555	20,445	1,269,875	149,647	2,240,310	354,777
1920	1,360,458	279,740	617,918	81,481	2,031,656	367,501
1921	1,432,133	227,114	492,480	67,109	1,964,420	296,612

[1] Classification first adopted in 1913. From Oct. 4, 1913, to June 30, 1914, included in "all other manufactures of fiber."

TABLE 42.—*Processed burlap*[1]*—Imports for consumption—Revenue 1914–1921.*

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.	Actual and computed duty, per pound.
		Pounds.			*Cents.*		*Cents.*
1914[2]	10 per cent	3,768,108	$345,697	$34,569	9.2	10 per cent	0.9
1915	do	2,018,540	164,092	16,409	8.1	do	0.8
1916	do	1,840,311	182,025	18,202	9.9	do	1.0
1917	do	1,853,014	217,410	21,741	11.7	do	1.1
1918	do	1,140,362	167,313	16,731	14.7	do	1.4
1919	do	2,193,896	344,803	34,480	15.7	do	1.5
1920	do	1,818,541	345,856	34,585	19.0	do	1.9
1921[3]	do	1,571,657	235,977	23,597	15.0	do	1.5
Annual average.[4]	.....	2,092,244	258,637	25,863	12.3	.....	1.2

[1] Classification first adopted in 1913.
[2] Oct. 4, 1913–June 30, 1914.
[3] Imports in the calendar year, 1921; were 1,016,418 pounds, valued at $105,263.
[4] 7.74 years.

TABLE 43.—*Domestic prices of cotton and jute brattice cloth, 1914-22.*

	Jute (22 ounces per square yard).	Cotton duck (12 ounces per square yard).		Jute (22 ounces per square yard).	Cotton duck (12 ounces per square yard).
1918:	*Cents.*	*Cents.*	1921:	*Cents.*	*Cents.*
Jan. 1	40	55	April	17.5	28
June 1	40	55	Sept.	14.5	24.3
1919:			1922: Jan.	14.0	24.3
Jan. 1	38	48			
June 1	30	46			
1920:					
Jan. 1	30	46			
June 1	28	46			
Dec. 1	20	37			

TABLE 44.—*Prices, wholesale, domestic jute brattice cloth.*

	16-ounce tarpaulin.	14-ounce burlap.		16-ounce tarpaulin.	14-ounce burlap.
1914:	*Cents.*	*Cents.*	1917:	*Cents.*	*Cents.*
January	14	10½	January	20	16
July	14½	10¾	July	21½	16½
1915:			1918: January	(1)	18
January	13	9	1919: January	(1)	18½
July	17½	13	1921: January	(1)	14
1916:					
January	18½	16			
July	19½	17			

[1] Production discontinued.

Processed burlap [1]*—Rates of duty.*

Act of—	Paragraph.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1913	279	Plain woven fabrics of single jute yarns, by whatever name known, bleached, dyed, colored, stained, painted, printed, or rendered noninflammable by any process.	10 per cent ad valorem.

[1] Previous to the act of 1913, no distinction was made between burlap in the gray, and burlap which had been bleached, colored, etc.

COURT AND TREASURY DECISIONS.

Hop cloth, a plain woven fabric of single jute yarns, weighing not less than 6 ounces per square yard, and not exceeding 30 threads to the square inch, with a *2-inch colored stripe*, was held to be dutiable under the paragraph relating to burlap in the act of 1909. Paragraph 352 was also held to include similar cloth containing dyed, colored, or printed stripes (T. D. 32320, of 1912).

Brattice cloth, a jute fabric, treated with wood tar, oil, and mineral matter, was held dutiable as "plain woven fabrics of single jute yarns" under paragraph 352, act of 1909, and not as a manufacture of jute (G. A. 7104, T. D. 30967, of 1910). Jute fabrics, returned as plain woven fabrics of single jute yarns rendered noninflammable, found to be shipped upon delivery to a fireproofing plant and there rendered noninflammable, was held free of duty under paragraph 408 of the act of 1913. (Abstract 39058, of 1916.)

Plain woven jute burlap in the piece, 40 inches wide, *having a colored stripe 2½ inches wide* running lengthwise throughout the center of the fabric, the stripe being produced by colored warp threads, is dutiable as colored under paragraph 279 of the act of 1913, rather than free of duty under paragraph 408. (Abstract 42793, of 1918.)

Canvas cloth colored, consisting of a plain woven fabric of single jute yarns with a stripe running lengthwise about an inch from each edge, each stripe formed by four colored yarns, was classified as colored at 10 per cent ad valorem, under paragraph 279 act of 1913. It was found that the threads forming the stripes could not very well be removed without impairing the strength or integrity of the fabric. (Abstract 44508, of 1921.)

TABLE 48.—*Indian jute mills and their dividends, 1912–1921.*

[From "Capital," Calcutta, India, June 9, 1921, with the exception of columns 5 and 6, taken from issues of Jan. 13 and Mar. 10, 1921.]

(1) Names of mills. Companies marked P have preference shares.	(2) Managing agents, managing directors, or secretaries.	(3) Profit and loss carried over (in rupees).	(4) Paid up per share (in rupees).	(5) Market quotation in week ended Jan. 13, 1921 (rupees).	(6) Market quotation in week ended Mar. 10, 1921 (rupees).	(7) Market quotation in week ended June 9, 1921 (rupees).	Dividends per cent for year. 1912	1913	1914	1915	1916	1917	1918	1919	1920	1921
Albion P	Andrew Yule & Co., Ld	2,03,500	100	352	329	253	8	20	16	38	70	70	145	80	125	[1] 30
Alexandra P	Begg, Dunlop & Co	95,407	100	650	350	245	Nil	Nil	Nil	Nil	Nil	Nil	70	150	95	.... ..
Alliance P	do	3,17,588	100	720	558	384	12	16	8	40	160	65	150	175	[2] 150	.....
Anglo-India P	Duncan Bros. & Co	9,81,431	100	380	265	265	.....	.....	.....	.....	.....	12½	25	22½	35	[3] 20
Auckland P	Bird & Co	1,19,877	100	310	257	205	Nil	10	Nil	7½	30	45	140	150	[4] 60	.....
Bally P	Geo. Henderson & Co	1,86,704	100	230	215	135	.....	.....	.....	.....	.....	.....	10	20	20	[5] 10
Barnagore P	do	£894	£5	131	125	107	10	15	Nil	10	25	15	25	30	[6] 35	(7)
Behar	H. V. Low & Co., Ld	−£1,791	10	10	5	5	.....	.....	.....	.....	.....	.....	.....	.....	[8] Nil	.....
Belvedere P	Andrew Yule & Co., Ld	1,30,944	100	517	361	310	4	8	6½	26	50	80	190	80	120	.....
Benjamin	B. N. Elias	.....	7	2½	3¾	2⅜	.....	.....	.....	.....	.....	.....	.....	.....	Nil	.....
Birla P	Birla Brothers, Ld	.....	10	10½	6½	5	.....	.....	.....	.....	.....	.....	.....	.....	[9] Nil	.....
Budge-Budge P	Andrew Yule & Co., Ld	2,27,984	100	515	450	350	18	30	21	38	70	6	215	110	132½	[1] 30
Caledonian P	Andrew Yule & Co. Ld	1,11,038	100	549	492½	380	.....	.....	.....	.....	6	16	140	85	[10] 140	.....
Century	Gillanders Arbuthnot	.....	10	8	6¼	7	.....	.....	.....	.....	.....	.....	.....	Nil	[4] Nil	.....
Champdany	Jas. Finlay & Co., Ld	£329,782	£10	£10	£10	£10	4	10	6	6	20	45	45	70	[5] 80	(7)
Cheviot P	Andrew Yule & Co., Ld	50,138	100	(11)	(11)	100	.....	.....	.....	.....	.....	.....	.....	.....	[10] Nil	.....
			85	(11)	(11)	85										
CliveP	Bird & Co	87,982	10	279	226½	31	12	12	Nil	25	45	50	145	160	[4] 90	.....
Craig P	Begg Dunlop & Co	−£,237	10	10	7½	6	.....	.....	.....	.....	.....	.....	Nil	Nil	[9] Nil	.....
Dalhousie P	Bird & Co	1,94,070	100	528	397	353	15	17½	Nil	22½	55	75	140	120	[4] 150	.....
Delta P	Andrew Yule & Co., Ld	2,05,257	100	540	500	390	4	12	11	40	70	65	205	70	[10] 150	.....
Empire P	McLeod & Co	48,429	10	76½	64	52½	.....	.....	2½	20	55	85	125	150	200	.....
Fort Gloster P	Kettlewell Bullen & Co	27,972	100	1,060	839	698½	13	15	10	55	90	62½	180	140	225	[3] 50
Fort William P	do	77,404	100	410	330	270	Nil	Nil	Nil	Nil	10	32½	70	75	[11] 90	.....
Ganges P	Macneill & Co	2,36,351	300	1,000	1,000	500	.....	.....	.....	.....	20	75	300	160	180	.....
			255	850	360	425										
Gondolpara	Gillanders Arbuthnot	3,00,214	300	1,600	1,000	845	Nil	5	5	10	20	36¾	[12] 216¾	100	75	(7)
Gourepore P	Barry & Co	18,670	100	1,000	1,055½	685	20	30	5	50	90	40	300	110	[13] 260	[3] 200
Hooghly P	Gillanders Arbuthnot	3,30,283	10	111	90½	72½	.....	.....	5	20	50	37½	125	[13] 400	200	[4,7] 75
Howrah P	Howeson Bros., Ld	5,48,711	10	44½	38⅜	34	5	6	Nil	17½	55	60	[14] 140	100	130	[3] 50
Hukumchand P	Sarupchand Hukumchand	19,191	5	5	2½	2½	.....	.....	.....	.....	.....	.....	.....	Nil	Nil	.....
India	Mackinnon Mackenzie	3,16,874	300	[15]1,375	400	525	8	7	110	30	10	100	120	[13] 220	[8] 10	(7)
			375	[15]1,718¾	415	656½										
Kamarhatty P	Jardine, Skinner & Co	8,96,700	100	965	930	638½	10	17½	8	30	60	55	150	225	250	.....

Kanknarrah P.	Jardine, Skinner & Co.	6,03,228	100	661½	482½	435	20	50	20	60	120	85	200	200	175	.....
Kelvin P.	McLeod & Co.	1,22,295	100	1,060	950	819½	10	10	15	40	80	100	150	225	300	.....
Khardah P.	Anderson Wright Co.	1,91,862	100	572	470	330	15	20	16	30	60	45	135	120	175	[3] 55
Kinnison P.	F. W. Heilgers & Co.	11,58,618	100	1,300	840	820	15	25	20	50	100	125	275	200	375	[5] 175
Lansdowne P.	Bird & Co.	1,14,542	100	427½	295	242	Nil	Nil	Nil	Nil	Nil	15	80	120	[4] 95	.....
Lawrence P.	.....do.	1,29,221	100	735	565	440	15	17½	5	22½	55	75	200	200	[4] 185	.....
Lothian P.	Andrew Yule & Co., Ld.	60,587	100	370	310	240	.....	.....	.....	.....	.....	Nil	28	30	[12] 100	.....
Naihati P.	F. W. Heilgers & Co.	1,35,472	100	670	530	350	5	10	10	10	30	50	200	150	100	.....
National P.	Andrew Yule & Co., Ld.	2,93,717	100	365	300	[15] 230	10½	24	18	110	275	[16] 35	135	80	100	[1] 30
New Central P.	.....do.	1,92,167	100	785	550	442½	19½	45	55	[16] 70	70	80	330	125	190	.....
Northbrook P.	Bird & Co.	1,03,729	10	77	64½	52½	12½	17½	Nil	17½	45	70	200	200	[4] 200	.....
Nuddea.	Barry & Co.	.....	100	66½	51	41	.....	.....	.....	.....	.....	.....	.....	.....	.....	[9]
Orient P.	Andrew Yule & Co., Ld.	.....	100	50 / 100	140 / 115	85	.....	.....	.....	.....	.....	Nil	Nil	Nil	[10] Nil	.....
Reliance P.	Howeson Bros., Ld.	5,12,582	10	47½	38½	33	Nil	12	4	10	35	90	105	100	130	[3] 50
Samnuggur P.	Thomas Duff & Co.	£98,300	£10	£35	£35	£22½	15	15	10	30	40	35	50	50	45	[7]
Soorah P.	McLeod & Co.	18,991	100	260	210	170	8	4	5	10	15	15	37½	40	40	.....
Standard P.	Bird & Co.	99,585	100	613½	500	360	22½	25	5	30	65	85	200	200	[4] 150	.....
Titaghur P.	Thomas Duff & Co.	£125,765	£10	£39	£39	£23½	15	20	10	30	40	40	70	50	45	[7]
Union P.	Bird & Co.	79,538	100	820	700	471	22½	25	5	37½	80	110	275	250	[4] 190	.....
Victoria P.	Thomas Duff & Co.	£65,915	£10	£37½	£37½	£22½	15	20	10	30	40	35	60	50	45	[7]
Waverley P.	Begg, Dunlop & Co.	.....	10	13	11	8¼	.....	.....	.....	.....	.....	.....	.....	Nil	[2] Nil	.....

[1] Half-year ended Apr. 30.
[2] Year ended Jan. 31, 1921.
[3] Half-year ended Mar. 31.
[4] Year ended Mar. 31, 1921.
[5] Year ended Mar. 31.
[6] Year ended Aug. 31.
[7] Accounts published yearly.
[8] Half-year ended Sept. 30.
[9] New company.
[10] Year ended Nov. 30.
[11] Fourteen months ended Mar. 31, 1921.
[12] Rupees 12,60,000 bonus distributed in fully paid ordinary shares in the Century Mills Co., Ld.
[13] Bonus of 200 per cent distributed in fully paid ordinary shares in the Nuddea Mills Co., Ld.
[14] Rupees 8,75,000 bonus distributed in fully paid ordinary shares.
[15] Ex-dividend, privilege or rights.
[16] Company reconstructed.
[17] Quotations where transactions are not reported are more or less nominal.

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TABLE 50.—*The United Kingdom's trade in jute manufactures, 1910–1921.*[1]

[000 omitted.]

	1910	1911	1912	1913	1914	1915
Yarn (pounds):						
Domestic exports	58,852	49,326	53,458	41,766	34,706	36,732
Foreign exports	420	376	288	210	80	7
Imports	3,442	3,326	4,742	4,761	2,795	10,089
Bags and sacks (dozens): Domestic exports	3,698	5,012	4,091	4,543	3,745	4,241
Piece goods (yards): Domestic exports	176,435	149,415	161,802	173,484	134,743	109,156
Other manufactures (pounds sterling):						
Domestic exports	152,905	216,474	233	267	197	493
Foreign exports[2]	1,751	1,324	1,441	1,616	1,446	1,564

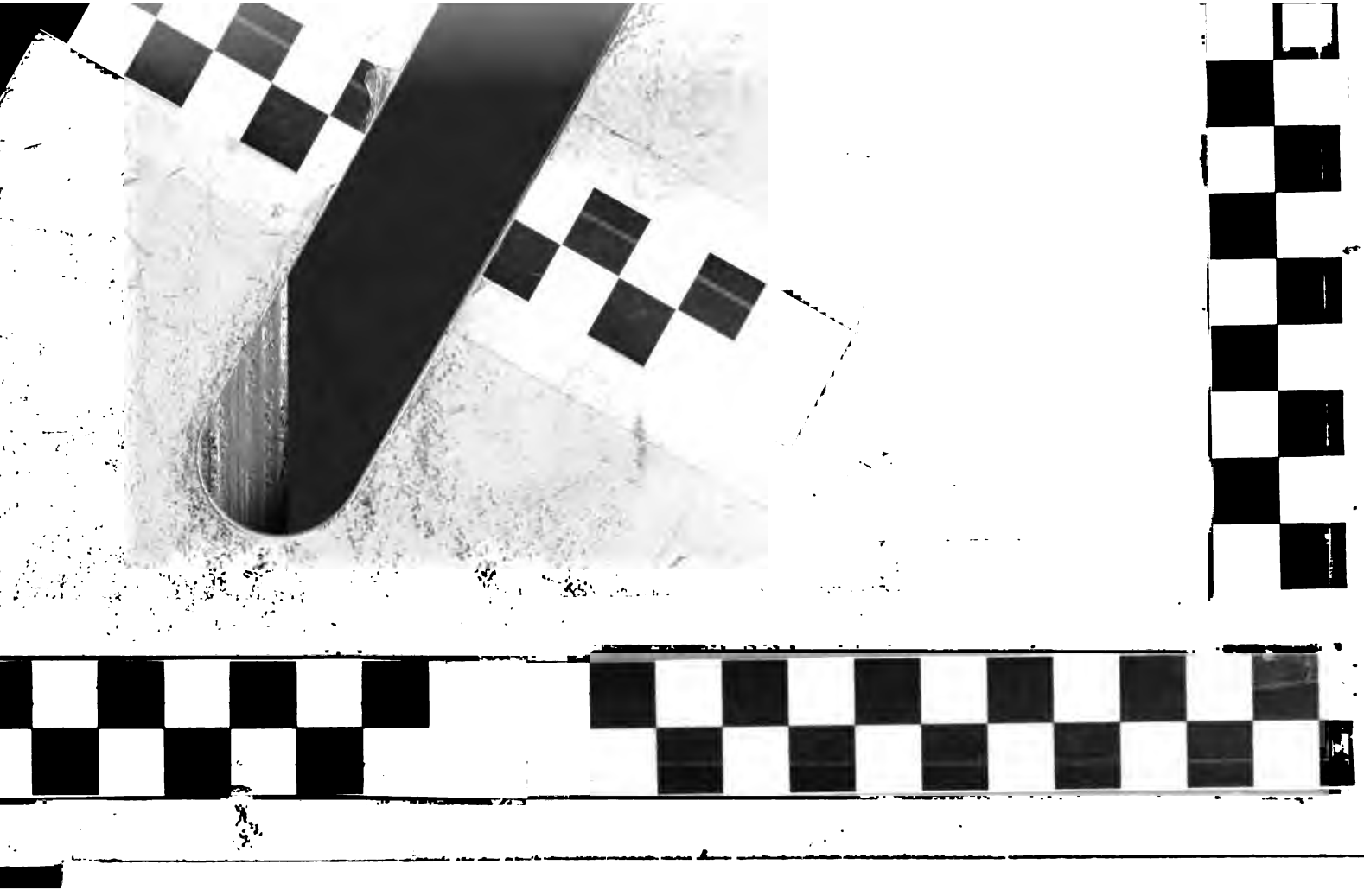
	1916	1917	1918	1919	1920	1921
Yarn (pounds):						
Domestic exports	30,403	29,090	5,769	23,649	43,553	27,877
Imports	7,197	687	.....	.....	.....	.....
Bags and sacks (dozens): Domestic exports	4,281	3,139	904	3,927	3,145	2,154
Piece goods (yards): Domestic exports	119,583	126,286	31,954	110,982	[3] 149,345	[3] 71,635
Jute carpets and rugs (yards)	.....	.....	.....	.....	[3] 1,116	[3] 448
Other manufactures (pounds sterling):						
Domestic exports	698	290	288	372	904	328
Foreign exports[2]	1,449	1,190	307	2,479	2,484	450

[1] Annual and monthly statements of trade of the United Kingdom. Cordage, cables, ropes, and twine of hemp, coir, or like material are not included in this table. Jute may be used in these articles, but the total quantities are small.

[2] Jute manufacturers, other than cordage, cables, ropes, and twines.

[3] Square yards.

○



UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPH 271 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

NETS AND SEINES

Paragraph 271:
Gill Nettings, Nets, Webs, and Seines, of flax, hemp, or ramie

Paragraph 266:
Similar articles of cotton

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for, and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and index" the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of John J. Cameron, of the textile division of the commission's staff, and of others.

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NETS AND SEINES.

GILL NETTINGS, NETS, WEBS, AND SEINES OF FLAX, HEMP, OR RAMIE

TARIFF ACT OF OCTOBER 3, 1913.

PAR. 271. Gill nettings, nets, webs, and seines made of flax, hemp, or ramie, or a mixture of any of them, or of which any of them is the component material of chief value, 25 per centum ad valorem.

SUMMARY.

Flax is the chief material used in the production of gill nets, whereas seines are usually made of cotton. Hemp and ramie are seldom employed in the domestic manufacture of these articles.

The domestic consumption of fishing tackle made of flax is mainly supplied by American firms working on flax yarns spun in this country from imported flax. The domestic output is not known precisely, but the export trade is much larger than the import.

Record imports under paragraph 271, act of 1913, amounted to 66,664 pounds, valued at $64,320, in the fiscal year 1918. Imports in the fiscal year 1922 were 13,864 pounds, valued at $14,444. These were mainly gill netting from the United Kingdom.

Flax fish nets exported with the benefit of the drawback in 1920 amounted to 25,590 pounds. In the years 1905–1920 fish nets so exported totaled 401,814 pounds, as compared with imports under this paragraph of 395,896 pounds in the same period. Over half of Canada's total imports of textile fishing tackle originates in the United States.

Imports of cotton fishing nets are small, and are supplied mainly by the United Kingdom and Japan. The record export to this country from Japan amounted to 43,321 pounds in 1917, valued at $24,081.

GENERAL INFORMATION.

DESCRIPTION AND USES.

The word "gill" has been held to qualify nets as well as nettings.

The paragraph relates only to fishing appliances made of flax, hemp, or ramie, or a mixture of any of these materials. Those manufactured in whole or in chief value of cotton are dutiable as "manufactures of cotton." Since cotton is now much more extensively used than flax in the production of fishing nets, this survey includes a description of such articles when made of cotton.

Gill netting is the netting used in the construction of fish nets. It is made by crossing threads, twines, or cords, and knotting the intersections to form meshes.

The types of gill nettings are many, varying according to the kind of fish to be caught. For taking trout, herring, or smelt the single-knot linen gill netting commonly employed ranges in mesh from 1½ inches, by quarter of inches, up to 4 inches; it is usually 100 meshes

deep and made of twine size No. 20, 3-cord. In contrast, the double-knot linen gill netting commonly employed to take salmon is usually made from No. 40 thread, ranging from 4 to 15 ply.

The same diversity exists in cotton gill netting. That made of fine cotton, for catching trout, herring, or smelt, ranges by quarter of inches from 1½ to 3½ inches in width of meshes, is usually a hundred meshes deep and, when stretched, averages in length between 35 and 44 feet to the pound.

Gill nets are designed for catching fish by gilling; i. e., the mesh is of sufficient size to admit only the head, and thus slips under and back of the gills, to hold the fish.

In construction and length gill nets differ greatly, according to the locality where used and the kind of fish to be taken. Inland fisheries require a light thread and a small mesh, and the ocean fisheries a heavier twine and larger mesh. In size gill nets range from 50 feet when used in small inland streams to 1,600 and 1,800 feet when employed on the Great Lakes, where they are often set in strings from 8 to 10 miles long.

The leading types of gill nets are drift nets and set nets, made from either linen or cotton twine. The drift net is so rigged with a cork line, set on the surface of the water, that it floats in a perpendicular position with the tide. Set nets are attached to stakes or anchored. When used for taking surface school fish such nets are anchored on the surface; for taking ground fish they are set on the bottom. Drift and set nets differ. Trammel nets, for instance, a type of drift net constructed by hanging a web of small mesh netting of very light linen between two webs of coarse mesh, are usually made of 9-inch mesh outside and 2½-inch mesh inside. These nets are designed for use in rivers, creeks, and ponds. Among the leading types of set nets is the fyke net, a bag-shaped net which usually has its largest hoop between 4 and 5 feet in diameter. In length, this type of net ranges from 7½ to 9 feet. The size of twine commonly employed in its manufacture varies between No. 12 and No. 15 thread.

Gill nets of flax are mainly used in the fresh-water districts and less so in some of the salt-water sections, as in the salmon-producing districts of Alaska. An estimate places the number of salmon caught by means of gill nets made of linen twine as constituting 50 per cent of all the salmon packed.

Gill webs are pieces of netting that have not been hung or rigged to ropes. These webs are usually made from linen or cotton twine.

Seines are large nets having one edge provided with sinkers and the other with floats. Seines differ from gill nets in that they are designed for sweeping in the fish by bringing the ends of the seine together.

There are two classes of seines—purse, and haul or drag seines. Purse seines are employed for taking fish in the open sea and are operated by surrounding the school and bringing both ends of the seine together. Haul or drag seines are worked from the beach and dragged over the bottom. Seines used in American fisheries are manufactured from cotton. Those made from linen, hemp, or ramie are not used here.

According to the locality where used and the type of fish to be taken, the seines within these two classes differ greatly from one another. In size the salmon seine, as used on Puget Sound, averages in length about 275 fathoms (a fathom equals 6 feet), with a depth

of about 400 meshes of 3¾ inches No. 9 or 12 thread netting, with about 50 meshes of 5-inch No. 15 or 18 thread netting on the bottom of the seine. For taking salmon, the haul or drag seine commonly used averages in length about 150 fathoms, and in depth about 7 fathoms. The netting in the bunt—that is, the center or the bagging of the net—is usually of 3-inch mesh made from No. 15, 17, or 21 thread, and in the wings of 3½-inch mesh made from No. 12 to 15 thread. The same type of seine used for catching herring averages in length 100 fathoms and in depth 6 fathoms, with the netting used in the bunt of 1¼-inch mesh from No. 9 thread, and in the wings 1½ or 2 inch mesh made from No. 6 or 9 thread.

Pound nets, traps, and weirs are fixed apparatus, usually set in relatively shallow water near shore. The distinctive feature of such gear in its simplest form is a long leader of webbing (or brush), extending offshore, which deflects the fish through a V-shaped "heart" into a square or rectangular pocket or trap at the offshore end. The leader, which may be up to 900 feet or more in length, is of coarse-meshed netting (10 to 12 mesh, of 18 to 24 thread, are frequently used). The size of mesh and thread used on the sides and bottom of the trap varies with the size of fish and the fisheries for which used. In the salmon fisheries leader and sides of traps are frequently of wire netting.

This form of gear is extensively used in the coastal areas, along shore, in the bays and rivers, and in the interior waters; in point of value it exceeds that of any other form of fishing gear used in the fisheries of the United States.

Substitutes.—Cotton may be substituted in some cases for linen in making nettings and nets. For taking small or slow-moving varieties of fish, where strength of the net is not essential, nets made of fine cotton threads will suffice. Likewise, nets made of the coarse sizes of cotton twine can be employed in place of linen twine where the water is not so clear that the netting will be too plainly visible. Where a strong netting is required, as in the salmon fisheries, cotton is a poor substitute for flax.

DOMESTIC PRODUCTION.

Fifteen establishments in 1914 and 19 in 1919 manufactured fish nettings, nets, crab scrape bags, and seines of all materials. The capitalization of the 15 establishments in 1914 was $2,678,000 and of the 19 establishments in 1919, $4,156,000. The number of wage earners employed in this industry was 1,058 in 1914 and 859 in 1919, while the value of the output rose from $3,088,000 in 1914 to $5,114,000 in 1919.

Materials.—The fiber materials used in American fisheries are flax, cotton, and manila. Efforts were made in 1920 by the Japanese to introduce a netting made of ramie, and by the British to import quantities of netting made of hemp.

Flax, on account of its strength and durability, is extensively used in the construction of domestic nettings, nets, and webs. The leading domestic manufacturers of this class of fishing tackle spin their yarn. As the production of flax in this country forms but a very small percentage of consumption, and as practically none of the flax grown here is suitable for the manufacture of gill netting, nets, and

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webs, the domestic manufacturer is dependent upon imports for his raw materials. Because of the methods used in preparing domestic flax for spinning, the little flax produced is not suitable for gill nettings, nets, and webs, which require the strongest and best of flax.

Most of the flax imported for this purpose comes from Ireland, where it has been hackled to remove foreign materials and short and uneven fibers. Previous to 1914 hackled flax usually formed the lowest percentage of the different classes of flax imported. Imports of hackled flax during the years of 1910–1913 totaled about 1,500 tons, or 14 per cent. In 1914, upon the removal of the specific duty, of which the ad valorem equivalent had been about 11 per cent, imports of hackled flax rose to 2,590 tons and maintained this level during the next four years. Since 1918, however, imports of such flax have declined, amounting to 1,878 tons during the fiscal year 1922.

The domestic production of linen thread and twine is much larger than imports. In 1914 domestic concerns manufactured 5,707,668 pounds of linen thread, valued at $3,409,136, and 4,953,622 pounds of flax twine, worth $1,051,684. In the year ended June 30, 1914, imports of thread, twines, and cords of flax, hemp, or ramie, which were unusually large, totaled 784,936 pounds, valued at $442,674. In the calendar year 1919 the domestic production of linen thread amounted to 4,280,000 pounds, valued at $6,691,000, while imports of thread, twines, and cords of flax, hemp, or ramie amounted to 328,856 pounds, valued at $623,283.

Domestic manufacturers of fish nettings and nets, however, find it necessary to import a substantial part of their linen yarn, threads, and twine. A concern which sells the product of a number of netting mills, and of one net and netting mill, reports that these mills in 1914 imported about 21 per cent of all the linen yarn, thread, and twine employed in that year in the manufacture of fish nettings and nets and in 1919 about 20 per cent.

There are no figures available showing the quantities of flax consumed in the domestic manufacture of this class of fishing tackle.

A comparison of the raw materials used in nets of foreign make shows that the flax used is equal, if not superior, to that employed in nets of domestic manufacture. In workmanship there is little difference in nets made from fine linen and from fine cotton. Domestic nets of coarse linen and of coarse cotton, however, are superior to those made abroad in point of workmanship and, in nets of cotton, also in the grade of material used.

Cotton is the material usually employed in the manufacture of seines. In the manufacture of gill nettings and nets, cotton is freely substituted for flax. For instance, where the mesh in the gill net is not over 3 inches, thread made of long-staple cotton can be substituted for the finer sizes of linen thread.

The use of cotton in the fish netting and net industry has increased until in 1920 the quantities employed exceeded those of linen. In recent years, particularly during the war, owing to the scarcity of flax and to the relatively low price of cotton, there has been a marked substitution of cotton for linen. No figures are available to show the extent of this substitution.

Soft hemp is not used to any extent for fishing tackle. Under normal conditions the little hemp used is imported, as the hemp grown in the United States is not suitable.

Manila, the chief material for making domestic ropes and marine cordage, is used by the domestic fish-netting industry in the manufacture of trawls, which are bag-shaped nets. British competition restricts domestic production of trawls, which are becoming more and more important in the fishing industry. The domestic producer, however, faces no difficulties in securing his supplies of raw manila. During the fiscal years 1910–1918 imports of manila fiber for manufacture, which are duty free, ranged between a maximum of 93,308 tons and a minimum of 49,287. In the calendar years 1919–1921 imports for consumption averaged 55,835 tons, having been 31,503 tons in 1921. The duty on manufactures of manila was 35 per cent in the act of 1913 and is 40 per cent in the act of 1922.

Ramie has not been used in this country as a raw material in the manufacture of fish nettings, nets, webs, and seines. One domestic manufacturer attributes this to the fact that ramie is not well adapted to gilling purposes; that the fiber is too hard, though it feels soft. Early in 1920, however, the Japanese were endeavoring to introduce fishing appliances made of this fiber.

Domestic consumption.—Fishery apparatus employed in the fisheries of the United States and Alaska is valued at not less than $15,000,000. The greater part of this investment is in nets, netting, and lines of cotton, flax, hemp, etc. Much of this material must be replaced annually or at the end of the second year. The annual investment is believed to be not less than $5,000,000.

Pound nets, traps, and weirs represent 42 per cent of the total investment in fishery apparatus; gill nets, 28 per cent; seines, 12 per cent; lobster pots, 4 per cent; and lines, 3 per cent. Many other forms of fishing apparatus which make use of webbing are employed; these include fyke nets, stop nets, beam and other trawls.

The approximate number and value of various forms of fishing apparatus used in the United States are shown in the following table:

Fishing apparatus of the United States.

[Based on reports of the U. S. Bureau of Fisheries.]

Kind.	Number.	Value.
Pound nets, trap nets, and weirs	18,000	$6,350,000
Gill nets	224,000	4,200,000
Seines	5,540	1,877,000
Lobster pots	247,000	623,000
Trammel nets, fyke nets, and stop nets	.....	579,000
Beam and other trawls	.....	79,000
Lines	.....	515,000
All other	.....	777,000
Total	.....	15,000,000

Equipment.—Gill netting is manufactured almost exclusively by machinery. The greater number of the nets, however, are made by the fishermen themselves, the manufacturers supplying the web and perhaps the lines, floats, and leads, and the fishermen assembling them during idle or off-season periods.

Methods of production.—The manufacture of netting is complicated. The nets are made of practically any size thread and any size mesh; often the same nets contain a combination of various sizes of mesh.

Organization.—The same firms specialize in fishing articles made of linen and of cotton. The nature of the fishing industry is such that it is necessary for these firms to keep large and quickly available stocks of supplies to meet the sudden and irregular demands of the fisheries.

The greater part of the flax nettings and webs consumed in this country is sold through the agency of one company, which is the selling representative of a combination of the largest American and English mills producing linen threads, twines, nettings, and nets.

Geographical distribution.—The manufacture of nets and seines is practically confined to the eastern part of the United States. Of the 19 establishments manufacturing these articles in 1919, 68.42 per cent were located in Connecticut, Massachusetts, Pennsylvania, Illinois, and Maryland. Of the other six, only two were not in the Eastern States; one in Missouri and one in Washington.

Domestic production.—The combined production of a number of domestic firms engaged in the manufacture of linen nettings and nets was about 28,000 pounds greater in 1914 than in 1919.

In point of quantity, the combined production of nettings, nets, webs, and seines made from cotton is several times greater than that manufactured from flax.

In contrast to the production of fishing appliances made from linen, the production of such articles made of cotton was greater in 1919 than in 1914.

The quantity of gill nettings, nets, webs, and seines made in this country from hemp is negligible. Ramie is considered unsuitable for the manufacture of this class of fishing tackle.

EXPORTS.

Exports are not separately recorded in American export statistics.

The trade with Canada, however, which admits such articles free of duty, shows the strong position held by American manufacturers in the Canadian market, and indicates the strength of the leading foreign competitors.

Imports by Canada from the United States of fish lines, nets, trawls, seines, twines for fishing nets, without reference to the textiles used in their manufacture, and of manila rope not exceeding 1½ inches in circumference for use in fisheries, averaged annually about $600,000 for the years 1910–1914 and about $916,000 for the years 1915–1918. For the years 1919, 1920, and 1921 Canadian imports from the United States were valued at $1,469,788, $1,528,337, and $1,295,266, respectively, and constituted more than half the value of Canadian total imports of such articles for use in the fisheries. For the period 1910–1914 the United States furnished Canada with 52.37 per cent of all her imports; for the period 1915–1918, 56.62 per cent; and for the years 1920 and 1921, 63.60 per cent and 48.09 per cent, respectively. The United States shares Canada's import trade in fish nettings, nets, webs, and seines with the United Kingdom. Only in 4 of the last 20 years, viz, 1902, 1908, 1915, and 1921, have imports from the United Kingdom exceeded ours. From these two sources Canada receives all but 2 or 3 per cent of textile articles used in her fisheries. Japan is the only other country that has within recent years furnished more than 1 per cent. For

the periods 1910–1914 and 1915–1918 the percentages supplied by Japan were 1.56 and 0.087, respectively. For the years 1920 and 1921 the percentages were 1.15 and 1.02, respectively.

Fifty per cent of the fish nets exported into Canada, it is estimated, are for American fishing concerns operating there. In turn, a very large percentage of the fresh-water fish caught in Canadian waters comes here and constitutes a large part of the fish consumed in the Middle West.

According to the report of the domestic company which sells to the trade the larger part of the netting and nets consumed in this country, Canada, Norway, Denmark, and Sweden received the greater part of the goods exported in the years 1914 and 1919.

Domestic exports of gill nettings, nets, webs, and seines made of cotton are many times greater than those made of flax. Reports from a number of companies show that their combined shipments abroad in 1914 of cotton netting were six times, and in 1919 about seven times, greater than their shipments of linen netting. The same companies report considerable shipments of purse seines during the year 1919.

Export trade in recent years has not suffered to any great extent from the competition of substitutes or from the tariff operations of any country. The only handicap has been the world shortage of flax since the beginning of the World War.

Drawback.—The quantity of exports of linen fish nets, made from imported materials, designed for foreign consumption and exported with the benefit of drawback, is large and about equal to that of nettings, nets, webs, and seines of flax, hemp, or ramie imported for domestic consumption. During the years 1905–1919 the quantities of fish nets imported with the benefit of drawback were slightly greater. As compared with a total of about 376,000 pounds of fish nets made in this country from imported materials and exported during these years with the benefit of drawback, imports of nettings, nets, webs, and seines manufactured from flax, hemp, or ramie for domestic consumption, totaled about 365,000 pounds. By five-year periods, beginning 1905, shipments abroad of flax fish nets exported with the privilege of drawback were greatest during the middle period 1910–1914, when they were about two-thirds in excess of the quantities shipped during the five years immediately preceding or immediately following. Total exports for each five-year period were: 1905–1909, about 102,000 pounds; 1910–1914, about 170,000 pounds, and for 1915–1919, about 104,000 pounds. During the fiscal year 1920 the quantity so exported was 25,590 pounds, on which the drawback paid amounted to $10,050.

FOREIGN PRODUCTION.

The United Kingdom is among the world's foremost producers of fishing tackle. The average yearly value of her exports of fishing tackle, which classification includes hooks, nets, lines, and twines used for fishing purposes, without reference to the materials from which manufactured, were during the years 1915–1918, about 37 per cent greater in value than for the previous five years. As compared with a yearly value of $2,051,419 for the years 1910–1914, her exports for the next four years, 1915–1918, averaged yearly $2,829,436. In 1919 they amounted to $5,002,460, but in 1920 dropped to $1,064,323 in value.

Japan's total exports of fish nets to all countries, not including Korea, declined from 492,904 pounds in 1913 to 321,347 pounds in 1915. During the next three years they increased to 1,004,892 pounds in 1918. In 1919 they were 1,048,405 pounds, valued at $534,891, and in 1920, 768,741 pounds, valued at $632,576.

IMPORTS.

American import statistics are limited to those showing the quantity and value of gill nettings, nets, webs, and seines of flax, hemp; or ramie, entered for consumption; they make no mention of countries from which imported.

For the first three years of the World War, imports of this class of flax fishing tackle ranged between 21,000 and 30,000 pounds. With totals of 66,644 and 48,684 pounds for the fiscal years 1918 and 1919, respectively, imports were the greatest on record during the past 20 years. For the five fiscal years 1915–1919 imports of linen nettings, nets, webs, and seines averaged yearly 38,634 pounds, as compared with 9,827 pounds for the corresponding period, 1910–1914, and 24,500 pounds for 1905–1909. In the fiscal year 1920, 14,000 pounds were imported.

That imports were so large during the years 1918 and 1919, when flax was difficult to obtain, owing to the lack of transportation facilities and to the collapse of Russia as a grower of flax, is due to the fact that the United States Food Administration fostered the growth of the fish-netting industry during American participation in the war by assisting in obtaining its greatly increased requirements.

Though the tariff acts of 1913 and 1922 have added hemp and ramie to flax as the materials from which fish nettings, nets, webs, and seines might be made, the above figures remain comparable, imports of those made of hemp or ramie having been negligible.

The United Kingdom is the chief foreign source for domestic supplies of flax materials used in the fisheries. The value of her exports to this country of hooks, nets, and lines, given without reference to the materials from which constructed, show a marked decline during 1910–1913 and a corresponding increase during 1914–1918. They fell from $213,729 in 1910 to $110,221 in 1913. During 1914–1918 ranging between $193,205 and $272,534, they averaged yearly $227,450, while in 1919 and 1920 they amounted to $251,160 and $66,720, respectively.

What data there are available show that our imports of this class of fishing tackle consist chiefly of linen gill netting. The domestic firm which supplies the trade with the greater part of its fish nettings and nets states that previous to the war there was imported annually into Portland, Oregon, a very large quantity of salmon gill netting of flax from Great Britain.

Flax yarns not finer than 5 lea are the leading yarns used in the construction of imported fish nettings, nets, webs, and seines. For instance, the percentages of our total imports manufactured from yarns not finer than 5 lea were 76 in 1900, 88 in 1905, and 58 in 1910.[1]

Imports of cotton fishing nets from Japan have increased since 1915. In the years 1910–1914 our consumption of Japanese nets

[1] The sizes of the yarns used in the manufacture of imported flax gill nettings, nets, webs, and seines are not given after 1913.

was greatest in 1912, when it aggregated 4,973 pounds, valued at $1,587. During the next three years, shipments from Japan rose in quantity from 6,558 to 43,321 pounds, and in value from $3,787 to $24,081. From the peak reached in 1917, exports to the United States declined to 21,801 pounds in 1918 and to 19,467 pounds in 1919, valued at $14,940. In 1920 there was a further decline to 8,797 pounds, valued at $11,964.

TARIFF HISTORY

Gill nettings, nets, webs, and seines since 1883 have been subject to varying types and rates of duty. The paragraph in the act of 1883 read as follows: "Seines and seine and gilling twine, 25 per centum ad valorem." In the act of 1890 the articles were listed as flax gill netting, nets, webs, and seines, and, according to the number of the yarn, were subject to compound duties. When made of yarn of a number not higher than No. 20, 15 cents per pound and 35 per cent ad valorem, and when made of threads or twines, the yarns of which were finer than No. 20, at 20 cents per pound, and in addition thereto 45 per cent ad valorem. The act of 1894 eliminated all mention of sizes of yarn and changed the duty to an ad valorem rate of 40 per cent. The acts of 1897 and 1909 assessed the duty on the basis of the threads, twines, or cords of which the articles were made, plus the addition, in the act of 1897, of 25 per cent ad valorem and in the act of 1909 of 20 per cent ad valorem. The act of 1913 imposed a flat rate of 25 per cent ad valorem. In the act of 1922 the basis for assessing the duty was again made the thread, twine, or cord of which the article is made—the highest rate imposed on any of such thread, twine, or cord being applicable to the entire article—plus 10 per cent ad valorem.

COMPETITIVE CONDITIONS.

Foreign competition is practically limited to nettings, nets, and webs, made of flax. The competition in those made of cotton is not great enough to exert any marked influence on the domestic trade.

Such advantages as the English manufacturer, who is the leading foreign competitor in fishing tackle of flax, possesses are not due to superior workmanship or to lower costs of converting the threads and twines into nets. A prominent American manufacturer of linen thread says, "There is no difference in the efficiency of the help."[1] That the American producer labors under no handicaps in costs of making the nets from nettings is shown by the fact that the output of flax nets during 1905–1920 from imported materials, exported with the benefit of drawback, was greater than the total imports of gill nettings, nets, webs, and seines. What advantages the English manufacturer may have arise from his obtaining raw materials at home, whereas the American producer is dependent upon foreign sources for his flax; furthermore, the English producer can find the best of machinery in the United Kingdom, whereas the American is obliged to import all his spinning machinery. Such machinery was dutiable at 25 per cent under the act of 1913 and is dutiable at 35 per cent under the act of 1922.

[1] Hearings before the Committee on Ways and Means, 1913, p. 3688.

STATISTICAL TABLES.

Production of nets and seines [1] in United States, by States.

[From Federal Census.]

State.	1899	1904	1909	1914	1919
Massachusetts	$876,300	$1,260,181	.....	.....	.....
Illinois	186,303	238,376	.....	.....	.....
All other	413,419	226,355	.....	.....	.....
Total	1,476,022	1,724,912	$1,897,997	$3,088,000	$5,114,000

[1] Fish netting, seines, and crab scrape bags of all materials.

Imports for consumption of gill nettings, nets, webs, and seines of flax, hemp, or ramie—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duties collected.	Value per unit of quantity.	Actual and computed ad valorem rate.	Actual duty per pound.
		Pounds.				*Per cent.*	
1910	Same duty per pound as imposed upon the thread, twine, or cord of which made, plus 20 per cent.	8,798	$5,162	$2,876	$0.598	55.66	$0.225
1911	do	5,365	3,926	1,914	.732	48.78	.256
1912	do	4,882	1,629	967	.334	59.70	.198
1913	do	1,925	1,777	779	.923	44.17	.404
1914	25 per cent	28,338	28,433	7,144	1.003	25.13	.252
1915	do	30,225	25,633	6,408	.920	25.00	.312
1916	do	21,500	30,052	7,513	1.397	25.00	.349
1917	do	26,120	34,119	8,530	1.306	25.00	.326
1918	do	66,664	64,320	16,080	.965	25.00	.241
1919	do	48,684	53,426	13,356	1.097	25.00	.274
1920	do	31,079	60,823	15,206	1.957	25.00	.489
1921	do	48,400	58,890	14,725	1.217	25.00	.304
1922	do	13,864	14,444	3,611	1.042	25.00	.260

Wholesale prices, per pound, of linen gill netting.

[Data from R. J. Ederer Co., Chicago, Ill., April, 1916.]

Size of thread, linen.	Size of mesh in inches—stretched measure.					
	1½ to 1¾.	2 to 2⅜.	2½ to 2¾.	3 to 3⅞.	4 to 4¾.	5 and up.
No. 12, 3-cord	$2.44	$2.25	$2.11	$1.92	$1.85	$1.81
No. 14, 3-cord	2.60	2.39	2.23	2.10	2.01	1.96
No. 16, 3-cord	2.68	2.48	2.33	2.16	2.09	2.05
No. 18, 3-cord	2.83	2.63	2.48	2.33	2.23	2.21
No. 20, 3-cord	2.92	2.72	2.54	2.39	2.30	2.26
No. 25, 3-cord	3.24	3.03	2.86	2.71	2.64	2.61
No. 30, 3-cord	3.48	3.27	3.10	2.96	2.91	2.84
No. 35, 3-cord	3.77	3.59	3.41	3.31	3.24	3.19
No. 40, 3-cord	4.09	3.89	3.79	3.71	3.62	3.53
No. 45, 3-cord	4.45	4.25	4.11	4.04	3.94	3.84
No. 50, 3-cord	4.83	4.61	4.48	4.35	4.25	4.15
No. 60, 3-cord	5.93	5.71	5.54	5.41	5.32	5.29
No. 30, 2-cord	3.69	2.51	3.37	3.18	3.10	3.07
No. 35, 2-cord	4.01	3.81	3.66	3.48	3.43	3.40
No. 40, 2-cord	4.51	4.24	4.05	3.90	3.81	3.79
No. 45, 2-cord	4.97	4.77	4.60	4.45	4.37	4.33
No. 50, 2-cord	5.52	5.32	5.16	5.01	4.91	4.88
No. 60, 2-cord	7.16	6.99	6.84	6.65	6.60	6.55

Wholesale prices, per pound, of single-knot gill netting, for trout, herring, or smelt.

[Data from Pacific Net & Twine Co., Seattle, Wash., February, 1920.]

Size of mesh.	Number of meshes deep.	Size of twine.	Price.	Approximate length in feet to the pound, stretched measure.
LINEN.				
1½-inch	100	No. 20, 3-cord	$2.13	25
1¾-inch	100	.....do	2.01	25
2-inch	100	.....do	1.98	25
2¼-inch	100	.....do	1.90	26
2½-inch	100	.....do	1.84	26
2¾-inch	100	.....do	1.78	27
3-inch	100	.....do	1.73	27
3½-inch	100	.....do	1.67	28
4-inch	100	.....do	1.64	28
FINE COTTON.				
1½-inch	100	No. 20, 4-cord	$1.34	35
1¾-inch	100	.....do	1.25	40
2-inch	100	.....do	1.17	42
2¼-inch	100	.....do	1.11	43
2½-inch	100	No. 20, 5-cord	.96	40
2¾-inch	100	.....do	.93	42
3-inch	100	.....do	.90	43
3½-inch	100	.....do	.86	44
SEA-ISLAND COTTON—CABLE LAID.				
1½-inch	75	No. 30, 6-cord	$2.42	70
1¾-inch	75	.....do	2.29	70
1¼-inch	75	.....do	1.54	70
1¼-inch	75	.....do	1.45	72
2-inch	75	.....do	1.38	72

Exports of fishing tackle, hooks, nets, lines, twines, etc.,[1] from the United Kingdom.

Country.	1910	1911	1912	1913	1914	1915
British possessions	$809,260	$841,603	$957,737	$984,357	$1,079,263	$997,603
United States	213,727	195,059	183,112	110,221	251,350	199,303
Russia	65,323	84,366	79,319	114,334	108,844	57,157
Norway	82,599	111,394	122,811	122,120	131,152	209,697
Netherlands	141,265	130,408	130,451	248,226	139,201	187,282
France	104,970	137,094	121,590	154,789	109,978	48,660
Portugal	.....	.....	.....	49,662	58,247	92,707
Germany	103,494	131,906	136,710	133,308	92,702	.....
Iceland and Greenland	41,599	43,277	42,143	27,067	25,822	50,996
All other countries	273,585	264,407	256,981	289,489	215,781	206,530
Total	1,840,822	1,939,514	2,030,854	2,233,573	2,212,340	2,049,935

Country.	1916	1917	1918	1919	1920
British possessions	$1,468,432	$1,726,274	$1,932,073	$2,000,428	$438,574
United States	193,205	272,534	244,765	251,160	66,720
Russia	85,130	30,201	.....	114,879	25,208
Norway	447,742	482,820	146,545	828,517	141,542
Netherlands	31,068	127,950	.....	187,088	10,278
France	61,702	92,128	115,000	409,380	121,468
Portugal	160,439	191,580	150,681	230,025	75,231
Germany	.....	.....	.....	2,141	78
Iceland and Greenland	167,977	201,045	56,680	233,441	482
All other countries	268,723	309,222	303,905	745,401	184,742
Total	2,884,418	3,433,754	2,949,649	5,002,460	1,064,323

[1] Exports of Produce and Manufacture of the United Kingdom. Source: Annual Statement of the Trade of the United Kingdom with Foreign Countries and British Possessions.

Canadian imports [1] of gill netting, nets, webs, and seines.

Fiscal year ended Mar. 31—	Total.	United States.	United Kingdom.	Japan.	Newfoundland.
1910	$900,125	$455,018	$391,799	$46,231	$2,577
1911	1,099,481	589,989	488,114	17,719	2,171
1912	1,052,518	572,724	462,325	12,656	3,858
1913	1,378,488	704,869	660,099	9,939	862
1914	1,305,944	681,475	611,360	2,942	2,400
1915	1,346,162	663,642	674,766	5,089	609
1916	1,289,647	850,653	427,910	8,979	2,105
1917	1,718,944	1,021,476	681,048	13,542	1,087
1918	2,120,154	1,130,071	958,782	28,846	1,677
1919	2,647,369	1,469,788	1,094,348	81,304	1,879
1920	2,400,020	1,528,337	841,367	27,643	3,573
1921	2,693,537	1,295,266	1,362,029	27,408	4,084

[1] Bank, cod, pollock, and mackerel fish lines, and mackerel, herring, salmon, seal, seine, mullet, net and trawl twine in hanks or coils, barked or not, in variety of sizes and threads, including gilling threads in balls, and head ropes for fishing nets, manila rope not exceeding 1½ inches in circumference for holding traps in the lobster fishery; barked marline, fishing nets, and net morsels of cotton, hemp, or flax, and fishing nets or seines, when used exclusively for the fisheries, and not including lines or nets commonly used for sportsmen's purposes.

Rates of duty on gill netting, nets, webs, seines of flax, hemp, or ramie.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1883	347	(Schedule J). Seines and seine and gilling twine	25 per cent ad valorem.
		(Schedule N). Webbing, composed of cotton, flax, or any other materials, not specially enumerated or provided for in this act.	35 per cent ad valorem.
1890	367	Flax gill netting, nets, webs, and seines:	
		When the thread or twine of which they are composed is made of yarn of a number not higher than 20.	15 cents per pound and 35 per cent ad valorem.
		When made of threads or twines, the yarn of which is finer than No. 20.	20 cents per pound and in addition thereto 45 per cent ad valorem.
	371	All manufactures of flax or hemp, or of which these substances, or either of them, is the component material of chief value, not specially provided for in this act * * *.	50 per cent ad valorem
	374	All manufactures of jute, or other vegetable fiber, except flax, hemp, or cotton, or of which jute, or other vegetable fiber, except flax, hemp, or cotton, is the component material of chief value, not especially provided for in this act:	
		Valued at 5 cents per pound or less	2 cents per pound.
		Valued above 5 cents per pound	40 per cent ad valorem.
1894	272	Flax gill netting, nets, webs, and seines	Do.
	277	All manufactures of flax, hemp, jute, or other vegetable fiber, except cotton, or of which these substances or either of them is the component material of chief value, not specially provided for in this act.	35 per cent ad valorem.
1897	332	Flax gill netting, nets, webs, and seines shall pay the same duty per pound as is imposed in this schedule upon the thread, twine, or cord of which they are made, and in addition thereto.	25 per cent ad valorem.
	330	Threads, twines, or cords, made from yarn not finer than 5 lea or number, composed of flax, hemp, or ramie, or of which these substances or either of them is the component material of chief value,	13 cents per pound.
		If made from yarn finer than 5 lea or number	¾ of 1 cent per pound additional for each lea or number, or part of a lea or number, in excess of 5.
1909	342	Flax gill netting, nets, webs, and seines shall pay the same duty per pound as is imposed in this schedule upon the thread, twine, or cord of which they are made, and in addition thereto.	20 per cent ad valorem.
	340	Threads, twines, or cords, made from yarn not finer than 5 lea or number, composed of flax, hemp, or ramie, or of which these substances or either of them is the component material of chief value.	10 cents per pound.
		If made from yarn finer than 5 lea or number	12 cents per pound and ¾ of 1 cent per pound additional for each lea or number, or part of a lea or number, in excess of 5.

Rates of duty on gill netting, nets, webs, and seines of flax, hemp, or ramie—Continued.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1913	271	Gill nettings, nets, webs, and seines made of flax, hemp, or ramie, or a mixture of any of them, or of which any of them is the component material of chief value.	25 per cent ad valorem.
1922	1006	Gill nettings, nets, webs, and seines, and other nets for fishing, composed wholly or in chief value of flax, hemp, or ramie, and not specially provided for, shall pay the same duty per pound as the highest rate imposed in this act upon any of the thread, twine, or cord of which the mesh is made, and, in addition thereto.	10 per cent ad valorem.
	1004	Threads, twines, and cords, composed of two or more yarns of flax, hemp, or ramie, or a mixture of any of them, twisted together, the size of the single yarn of which is	
		Not finer than 11 lea:	
		In the gray	18½ cents per pound.
		Boiled	20½ cents per pound.
		Bleached, dyed, or otherwise treated	23½ cents per pound.
		Finer than 11 lea and not finer than 60 lea:	
		In the gray	18½ cents per pound and ¾ of 1 cent per pound additional for each lea or part of a lea in excess of 11.
		Boiled	20½ cents per pound and ¾ of 1 cent per pound additional for each lea or part of a lea in excess of 11.
		Bleached, dyed, or otherwise treated	23½ cents per pound and ¾ of 1 cent per pound additional for each lea in excess of 11.
		Finer than 60 lea:	
		In the gray	56 cents per pound.
		Boiled	58 cents per pound.
		Bleached, dyed, or otherwise treated	61 cents per pound.
		Provided, That the duty on the foregoing threads, twines, and cords shall not be less than	30 per cent ad valorem.
	1624	Nets or sections of nets for use in other trawl fishing, if composed wholly or in chief value of manila or vegetable fiber.	Free.

Court and Treasury Decisions.

Nets made of flax yarns of a number not higher than 20 and used in fishing for shrimps were held to be dutiable as nets and not as manufactures of flax or of jute or other vegetable fiber. (G. A. 2804, T. D. 15410, of 1894.)

Fishing nets composed of cotton were held not to be dutiable under the provision in paragraph 339 of the act of 1897 for "nets or nettings, * * * composed wholly or in chief value of * * * cotton," but under paragraph 322 as "manufactures of cotton." (Ederer *v.* United States, T. D. 25111, of 1902.)

Large fish nets or trawls for deep-sea fishing were excluded from paragraph 271 of the act of 1913 as nets made of hemp because the so-called "manila hemp" of which they were composed was shown not to be a true hemp in the tariff sense. They were held to come within paragraph 284 as manufactures of vegetable fiber, n. s. p. f. (G. A. 8316, T. D. 38252, of 1920.)

The word "nets" under the rule of ejusdem generis is limited to those used in fishing and fisheries, and the word "gill" before nettings also qualifies nets. Tennis nets made from Russian hemp are accordingly not within the provision, but fall within paragraph 284 as manufactures of hemp. (Abstract 36875, T. D. 34920, of 1914; G. A. 7745, T. D. 35562, of 1915.)

Cotton nets used to lift fish out of the water after having been hooked up, and specially excepted from paragraph 165 of the act of 1909, were held more specifically provided for as nets and nettings under paragraph 349 than as manufactures of cotton in paragraph 332 of that act. (Abstract 35739, T. D. 34496, of 1914.)

Cotton landing nets, minnow nets, etc., used by fishermen, are dutiable as "manufactures of cotton" under paragraph 266 of the act of 1913, and not as "nets or nettings" under paragraph 358 of that act. (G. A. 8109, T. D. 37410, of 1917.)

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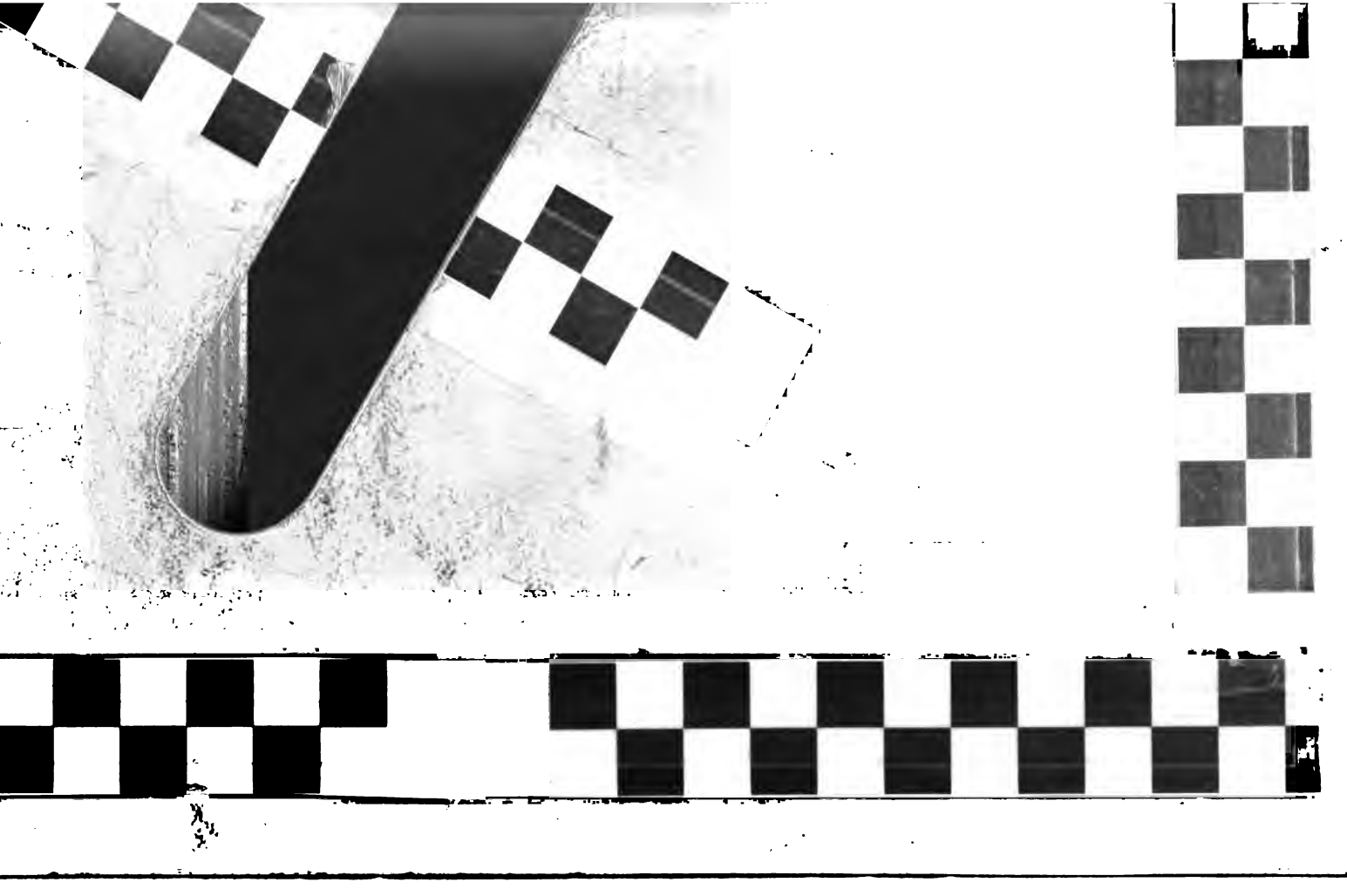

UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPH 274 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

HOSE FOR CONDUCTING LIQUIDS OR GASES

Paragraph 274:
Hydraulic or Flume Hose

Paragraph 368:
Rubber Hose

REVISED EDITION

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this, industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and Index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for, and if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and Index" the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of John J. Cameron, of the textile division of the commission's staff, and of others.

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HOSE FOR CONDUCTING LIQUIDS OR GASES.

SUMMARY.

Hose used to conduct liquids or gases is mainly of cotton with a rubber lining; a smaller amount, made of flax, hemp, ramie, and jute, is used only in negligible quantities.

The United States is the largest producer and consumer of this type of hose. It is probably also the largest exporter. Prior to 1918 imports were negligible; since then they have increased. The increase has been largely due to the fact that the high price of flax yarns destroyed the differential provided in the act of 1913 between the ad valorem rate on the yarns from which the hose is made and the specific duty on the finished hose. Imports have been almost entirely of linen hose.

During the fiscal year 1922 hydraulic or flume hose imported for consumption totaled 81,609 pounds, valued at $112,668, or $1.38 per pound, as against exports[1] valued at $1,150,657, quantity not stated.

GENERAL INFORMATION.

TARIFF ACT OF OCTOBER 3, 1913.

Par. 274. Hydraulic or flume hose, made in whole or in part of cotton, hemp, ramie, or jute, 7 cents per pound.

DESCRIPTION AND USES.

Hose is a term employed to designate flexible tubing used for conveying fluids or air and other gases. Its important uses are for fire protection and as an item of equipment in every plant where water, steam, gas, oil, or other fluids are conveyed from point to point.

So varied are the uses of hose in industry that over 40 different types are produced, the most common being water,[2] fire, garden, pneumatic, air-brake, and air-drill hose. Although a number of different kinds of material are used in the manufacture of hose, that made of fabric and rubber in various combinations is the most extensively used.

"Hydraulic or flume hose," specifically mentioned in the tariff acts of 1909 and 1913, is the only type of fabric hose suitable for conducting water, all other types with the exception of flexible metal tubing being provided for under general or catch-all paragraphs. Other types are in chief value of leather; of leather with metal rivets and couplings; or of rubber not made in whole or in part of cotton, flax, hemp, ramie, or jute. The last class was dutiable under the general paragraph relating to manufactures of rubber.

[1] The classification covering these exports is "India-rubber, manufactures of—hose."

[2] "Water hose" is a restrictive term referring to a certain type of hose used to convey water. The term "water hose" does not include fire hose or unlined cotton and linen hose.

The common varieties of hose used to convey water may be grouped, according to the materials used in their construction, into three general classes:

1. Rubber hose.
2. Unlined linen hose.
3. Unlined cotton hose.

1. *Rubber hose* is constructed of a rubber tube surrounded by a fabric covering. The great variety of uses to which it may be put, added to the fact that it can stand harder wear than any other type, makes it the most popular medium for conducting water. Rubber hose is ordinarily made and sold in this country in lengths of 50 feet, the sizes being indicated by internal diameters, expressed in inches. It may range in size from ¼ inch to 12 inches, and in the number of plies from one to six, according to the use for which it is intended. The principal size, 2½ inches, is extensively used for fire-protection purposes.

The chief types of rubber hose are:

a. Cotton rubber-lined hose.—This type, consisting of a rubber tube surrounded by a tubular woven cotton jacket, is employed where high pressures are to be encountered and where light-weight hose is desired. The cotton jacket strengthens the hose and the rubber tube or lining prevents leakage.

Cotton rubber-lined hose, though largely used for fire-fighting purposes, is also made in smaller sizes for garden and other light uses. The size 2½ inches, internal diameter, is most commonly used for fire service; sizes below 1 inch are for garden purposes.

b. Wrapped duck.—This type is made by surrounding a rubber tube with windings or plies of fabric, which has previously been coated with as much rubber as the fabric would hold. The chief advantage of wrapped duck hose is that its diameter may be of any size.

c. Braided hose.—In this type of rubber hose the rubber tube is covered by plies of braided cotton threads. Its chief advantages are that it can be made in any length desired, limited only by the facilities of the factory; that its construction calls for a minimum of machinery; and that when in service, it suffers less from kinking than any other type of hose.

2. *Unlined linen hose.*—This kind of hose, usually made of flax line yarn and, under normal conditions only to a limited degree of flax tow yarn or of hemp yarn, is employed to convey water under pressure without excessive leakage. Flax line yarn is made from selected flax fibers, whereas flax tow yarn consists of the fibers that remain, together with some woody fiber or shives, after the better flax has been removed. Owing to the fact that unlined linen hose is not able to withstand frequent service, and is, therefore, not suitable where the fabric will be subject to chafing or to rough or sharp surfaces, and that it does not properly adhere to rubber, its chief use is for indoor emergency fire-protective purposes. The principal size constructed is 2½ inches, though the 1½-inch size, because of its comparative lightness and the ease with which it can be handled is gaining in popularity.

3. *Unlined cotton hose.* This type of hose, of which there is comparatively little made, is sometimes employed where considerable quantities of water are to be conducted under little pressure, as in mining and railroad work. As it leaks to a considerable degree, it

is rarely used for fire-protection purposes. In size this type of hose ranges from 3 to 12 inches.

DOMESTIC PRODUCTION.

In 1914 there were 11 establishments manufacturing rubber hose as their chief product and 7 others that reported it among their other products. In 1919, 7 establishments produced rubber hose as a chief product and 20 establishments reported it as a subsidiary product. The value of the rubber hose produced by the 27 establishments in 1919 was $26,998,292, as against $16,853,693 produced by the 18 establishments in 1914.

There were 5 establishments in 1914 and 4 in 1919 making woven hose. The 5 establishments in 1914 were capitalized at $339,000, employed 114 wage earners, and had a product valued at $477,000.[3] The 4 establishments in 1919 were capitalized at $4,258,000, employed 379 wage earners, and had a product valued at $3,344,000.

Materials.—Crude rubber, cotton yarn, flax line yarn, and, to a limited extent, flax tow yarn, are the chief raw materials entering into the production of hose manufactured to convey water. Hemp, ramie, and jute do not enter to any appreciable extent into the production of hose.

a. Rubber.—During the years 1913–1917 domestic consumption of crude rubber, which is admitted free of duty, increased from about 50,000 tons to 175,000 tons, or from 50 per cent to 70 per cent of the world's consumption. The British and Dutch East Indies supplied 63 per cent of the crude rubber imported into the United States in 1917 and 77 per cent of that imported in 1921.

b. Cotton yarn.—Because of its cheapness, great tensile strength, and its superior adhesion to rubber, cotton is the most popular fabric used in the making of rubber hose.

Sea-island cotton, because of its strength, is the preferred material for hose, but aside from its relatively high price it is not available because of limited production. Long-staple American cottons are used in large quantities, together with an appreciable amount of imported Egyptian. All of the cotton yarn employed is spun in the United States. No. 12 cotton yarn is the chief size used in the production of rubber hose.

c. Flax yarn.—Because linen does not adhere closely to rubber, its use is chiefly restricted to unlined hose. The flax yarns used for hose purposes range in the main from 15 to 20 lea. These are mostly imported. During the war emergency, however, linen yarns as coarse as 10 lea were employed. Yarn made of domestic flax is not used for hose-making; the supply is small and it is said that the domestic method of retting the flax makes a fiber inferior to that made in Europe.[4]

[3] This does not include the woven hose produced by establishments engaged primarily in the manufacture of rubber and leather belting and hose or in the manufacture of awnings, tents, and sails.

[4] Retting (rotting) the vegetable gum which holds the fiber and the woody material together is carried on in Europe by soaking the flax straw in water in rivers or in stagnant pools, or else by scattering it on the ground and leaving it to the action of dew and sun. Only to a very limited extent is chemical retting employed—a process of subjecting the flax straw to chemicals, which shortens the time of fermentation and eliminates a great deal of hard labor. In the United States chemical retting is essential to overcome labor difficulties, but this process has not as yet been perfected and the fiber produced is considered inferior to that obtained by natural methods, usually being harsher and weaker.

The flax from which the yarn is produced has in the past been chiefly of Russian production. Prior to 1914 Russia produced about 85 per cent of the flax fiber of the world, and was the only country in which the production of flax fiber was increasing substantially. Nearly all of the flax yarn imported comes from the United Kingdom, chiefly from Belfast, Ireland, and Dundee, Scotland.

The yarn is for the most part imported in the single, and is subsequently doubled and twisted into threads of the required size and strength, the yarn as used ranging from 2 to 16 ply. It has been imported in the single mainly to avoid paying the higher duty on "threads, twines, or cords of flax."

Flax yarns for hose making are first freed of vegetable gums by being boiled in an alkaline solution.[5]

Previous to 1917 flax tow yarn was not extensively used as a substitute for line yarn in the production of linen hose. Of the total production in 1918, however, about two-thirds was made of flax tow and hemp yarn, principally of the former. In 1919 about half was flax line and half flax tow and hemp.

Although both flax line yarn and tow yarn make good hose, that produced from line is the more durable. Hose made of flax line has also greater durability than that produced from hemp line.

d. Hemp yarn.—As hemp does not combine well with rubber, because of its lack of elasticity, its use is confined to unlined hose. Under normal conditions very little hemp yarn is used in unlined hose. The British embargo on flax yarns in 1917 and 1918 caused the American manufacturers of hose to resort to the use of domestic hemp yarn as a substitute.

The American manufacturer, aside from being dependent on Europe for linen yarn, labors under no disadvantage in procuring supplies of raw materials adequate for his needs. During the years 1913–1921 the price of crude rubber fell because production continually kept ahead of consumption.

In the matter of obtaining cotton yarn for rubber hose and unlined cotton hose, the American producer has an advantage in that 99 per cent of the cotton yarn consumed in this country is of domestic production.

Domestic manufacturers of unlined linen hose have always been dependent, however, on Great Britain for their supply of linen yarn. This was recently shown by the curtailment of their production following the establishment of the British embargo on flax yarns in 1917 and 1918. The production of fiber flax in this country previous to 1914 showed a steady decline. In the period 1910–1913 annual imports averaged 10,939 tons, or over 95 per cent of the total consumption of the United States. Though under the influence of the war the acreage devoted to the raising of domestic flax fiber increased from 1,000 to 4,200 acres, the American manufacturer of hose preferred to use imported flax tow and domestic hemp yarn to the yarn produced from domestic flax. The chief handicap to the more extensive production of flax in this country, under normal conditions, has been the fact that it can not compete with our standard agricultural crops, which permit of a greater use of machinery and which demand a far less amount of trained yet tedious hand labor. The

[5] Underwriters' Laboratories specifications for unlined linen hose.

market on all flax products has been in a very precarious condition since 1914, because of Russia's participation in the war and the ensuing internal disorder. Until her political and industrial conditions again become normal the world can not count on Russian flax. The problem, therefore, is not so much to obtain flax from Russia as to extend sowings elsewhere. The lack of flaxseed further complicates the situation.[6]

Equipment.—The manufacture of rubber goods originated in the United States, and American manufacturers have always been foremost in the perfection and use of mechanical devices employed in the manufacture of articles made of rubber. The process of manufacturing rubber hose calls for a great variety of mechanical devices and attachments. In 1919 electric power formed 45 per cent of the total primary power for the rubber industry, as compared with 17 per cent in 1914 and .6.5 per cent in 1909. Steam power constituted 53 per cent of the primary power employed in 1919.

The American manufacturer of woven hose is not dependent on foreign sources for machinery used for twisting his yarns, or for weaving the twisted yarn into hose.[7]

Methods of production.—The general types of construction employed in manufacturing hose used to convey water may be grouped, according to the character of the hose, into two classes: (1) Rubber hose, (2) unlined hose.

1. *Rubber hose.*—Various methods are employed in making rubber hose out of rubber tubing. The manufacture of rubber tubing out of rubber stock is done both by hand and by machine.

Hand-made tubes.—The stock for hand-made tubes is composed of sheet rubber built up layer upon layer. This method prevents defects, one fold covering up any imperfections that may occur in another. These sheets are then shaped around mandrels—i. e., smoothly finished iron rods or steel pipe, usually 50 feet long—their edges being brought together on the mandrel in a lapped seam. The seam is then vulcanized—that is, subjected to the action of sulphur and heat—a process that adds to the strength and elasticity of the tube.

Machine-made tubes.—Machine-made tubes are constructed on standard machines known as tubing or spewing machines. The stock for machine-made tubes is supplied in thick slabs of rubber, which are cut into strips and then fed into the hopper of a tubing machine, being forced into the form of a tube through a slightly heated die by means of a spiral worm.

From the completion of the rubber tubing, rubber hose is made by one of three principal methods: (*a*) Rubber-lined cotton, (*b*) wrapped duck, (*c*) braided.

a. Rubber-lined cotton hose.—Though rubber-lined cotton hose is largely employed for fighting fire, the smaller sizes are also made in limited quantity for garden use. This type, known also as woven hose, consists of a rubber tube surrounded by a tubular woven cotton jacket. The jackets are woven for the most part on seamless looms. Any length of jacket may be woven,

[6] Linen Trade Circular, Belfast, Jan. 17, 1920.
[7] Tariff Hearings before Committee on Ways and Means, 1909, p. 4750.

but 50 feet is the usual length. In making hose for fire-fighting purposes one jacket is usually pulled into another to form what is popularly termed double cotton-jacketed rubber-lined fire hose. In sizes above ¾ inch inside diameter the tube and jacket are constructed independently, the tube or rubber lining, which has been coated with an adhesive rubber backing, being pulled into the jacket and then vulcanized.

b. Wrapped duck.—In making this type of hose, the hose fabric is put through a process whereby it receives a rubber coating on each side. This rubber-coated fabric is then cut on a bias and the pieces spliced together into lengths of about 50 feet and of a width sufficient to form the number of wrappings desired in each case. The rubberized fabric and the cotton sheeting for the covers, if such are to be provided, are applied in one operation by revolving the rubber tube on mandrels between two iron rollers; simultaneously the fabric folds and the covers are fed on and wind themselves automatically around the tube. These are smoothed down and rolled tightly by means of a third roller brought to bear upon the mandrels. Long strips of wet muslin are then wrapped tightly over the hose to hold the various parts in their places until the process of vulcanization has been completed.

c. Braided rubber hose.—The rubber tube for braided hose is produced on a tubing machine in pieces of 250 to 500 feet long. Upon removal from the mandrel a slight air pressure is maintained within the tube in order to keep the walls extended to their normal size and shape. The tube is then fed vertically into the braiding machine from beneath, the spool carriers passing in and out around each other, so feeding the yarn as to cover the tube with the braided fabric. There are either 24, 36, or 48 of these spools according to the size of the hose desired. Upon completion of the first braided ply, the tube and single fabric coating are passed through the tubing machine, where they receive a covering of rubber compound. This now partially constructed hose is again taken to the braiding machine, where the second jacket of cotton fiber is supplied. This procedure is repeated until the required number of plies has been obtained. The rubber hose is then run through a tub and given a bath of soapstone to prevent the hose sticking to the mold when being vulcanized. At the same time the hose is passed beneath spike pulleys to puncture the cover slightly, and so destroy any air pockets, which would result in blisters forming on the cover during the vulcanizing process.

Combinations of the above types of construction are becoming more and more common, as it is found that for certain kinds of work the combination type possesses greater strength and flexibility.

Where a hose is to receive rough usage, a rubber cover is often placed around the fabric, in order that the fabric may not come into contact with agencies that will shorten its life. Rubber covers are applied in sheet form by being wrapped around the hose, or in tubular form by being built over the fabric. They are usually one thirty-second of an inch in thickness. Other means of protecting hose are by winding wire or rope on the outside and by embedding wire or cable in the walls.

2. *Unlined hose* is usually woven on seamless looms. Underwriters' specifications for unlined linen hose call for a seamless fabric of

firm and even texture. The amount of leakage depends on the closeness of the weave. In the case of unlined linen hose the cells swell when wet, causing the fabric to tighten; whereas in the case of the cotton fiber, the weaving can not be made close enough to prevent excessive leakage under pressure.

Organization.—Both the rubber and woven hose industries are fast losing their independence as separate industries. This is due, in the case of the rubber-hose industry, to the increasing concentration of the manufacture of all rubber articles into the hands of large rubber companies, which produce thousands of different articles; in the case of the woven-hose industry it is due to the increasing number of textile and rubber factories that manufacture woven hose in addition to their other products.

The tendency of the rubber industry to become concentrated in large establishments is shown by the fact that firms with products over $1,000,000 reported 94 per cent of the total value of products in 1919 and 80.8 per cent in 1909. A very large part of the rubber hose made in this country is the product of four firms, which specialize in the manufacture of rubber articles of every description and include practically every type of hose. The crude rubber consumed by these firms in 1917 was over three-quarters of that used by all the companies manufacturing rubber hose of every type. In 1914 the number of establishments making rubber hose as their chief product was 11, as against 7 in 1919.

The American manufacturer of rubber hose has, in the undisputed possession of his home market, the largest market in the world. As the American product is generally cheaper and of a better quality than that made abroad, the matter of imports and exports has little interest for the American producer compared with that of supplying the domestic demand, which is steadily growing as the uses of rubber hose in industry are increasing.

There is a tendency, likewise, for the woven-hose industry to be concentrated in the hands of a few old establishments. In 1914 there were five concerns making woven hose. Since 1914 one of the largest has been absorbed by a company that specializes in the manufacture of rubber goods of all descriptions.

The American producer of linen hose until 1918 had complete possession of his home market, and was able to compete more and more in foreign market. Only since 1918 has there been a show of foreign competition, and this has been due to special circumstances resulting from the high price of flax yarns.

Geographical distribution.—The rubber belting and hose industry centers in New Jersey, Ohio, and Massachusetts. In 1919 the value of such products in these States was $19,176,384 in New Jersey, $14,046,539 in Ohio, and $5,760,923 in Massachusetts.

History of the industry.—The first fire hose used in this country was of rawhide or leather. The most common varieties produced were made by building strips of leather over a form and then sewing the edges together.

The first rubber hose manufactured in this country was in 1839. This consisted of a long tube of rubber placed in a rubber-treated fabric jacket, which was sometimes overlaid with a cotton cover. The jacket was formed by strips of cotton cloth, the width of which

was proportionate to the circumference of the hose desired. These strips were covered with rubber and then wound one at a time around the tube, previously placed on a mandrel.

This method of manufacture was abandoned in 1877, when a means of weaving the seamless tube of cotton was discovered, so that to-day the woven hose has practically eliminated the use of that constructed of leather.

The braiding method, whereby cotton covers are applied, by means of a machine around the tube of rubber compound, after the manner that ribbons are braided on a May pole, came into general use about 1908.

Domestic production and consumption.—The domestic production of all types of hose used for conveying water has been more than sufficient to supply domestic consumption. Imports have always been negligible, being far less than exports. In 1919 production of rubber hose of all types was valued at $26,998,292. Two companies manufacturing unlined hose reported their production in 1914 as approximately 2,340,000 feet, and in 1919 as 1,520,000 feet. For the year 1914 imports were valued at $2,644. As compared with total imports of 4,979 pounds in 1914, two American firms manufacturing hose made of linen report shipments abroad for that year totaling 102,175 feet.

Underwriters' specifications for weight of unlined fire hose.

Trade size (inches).	Weight.
	Pounds per 100 feet.
1½	11½
1¾	14
2	18½
2½	23

Domestic exports.—Rubber hose was not separately listed in the official export statistics prior to 1920, being included in "india-rubber belting, hose, and packing." The exports of this group of rubber products has, with the exception of the years 1914 and 1915, shown an increase from 1910 to 1920, amounting to a total of $1,960,825 in the fiscal year 1910 and $8,398,401 in the calendar year 1920. During the calendar year 1920 exports of rubber hose were valued at $3,340,882, while in the calendar year 1921 their value was $1,945,300. Although they go all over the world, in 1921 Mexico, England, British South Africa, and Cuba combined took 58 per cent of the total.

IMPORTS.

Prior to the war imports of hydraulic or flume hose were negligible; in succeeding years they have been on a new level, however. These imports have been almost entirely unlined linen hose, the importation of which became profitable when the high prices charged for flax yarn destroyed the differential provided in the act of 1913 between the ad valorem rates on such yarns and the specific rate on hose made from them. In the fiscal year 1921 imports of hydraulic or flume

hose were valued at $171,932 and in 1922 at $112,668. In the fiscal year 1922 the ad valorem equivalent of the specific rate provided for hose in the act of 1913 is 5.07 per cent, as against an ad valorem rate of 20 per cent provided for the yarns from which such hose is made.

COMPETITIVE CONDITIONS.

In the invention and use of machinery for making rubber products the United States has always been foremost. It is also the largest producer of coarse cotton yarns such as are used in the manufacture of hose for conveying water.

In the case of flax yarns only is the American hose manufacturer dependent on Europe. This is due to the lack of development of flax growing and spinning in this country. Under normal conditions there has been no difficulty in purchasing flax yarns from abroad, but during the war, owing to the collapse of Russia and to the British embargo on the export of flax yarns, domestic manufacturers of flax hose were somewhat handicapped. Russia, before the war, produced about 85 per cent of the world's fiber flax. As long as its product is absent from the world's markets, flax yarns will doubtless continue high and scarce.

TARIFF HISTORY.

The first tariff mention of hydraulic hose was in the act of 1890 (par. 368), when a specific duty of 20 cents per pound was assessed on "linen hydraulic hose, made in whole or in part of flax, hemp, or jute." In the act of 1894 the rate was changed to 40 per cent ad valorem. In the act of 1897 the 20 cents per pound rate was restored, but the wording changed by the omission of "linen" before "hydraulic," and by the addition of "ramie" to the list of materials of which the hose might be made.

In these three acts woven cotton hose, which constitutes the great bulk of the hydraulic hose made, was not included, but was dutiable as countable cotton cloth.

In the act of 1909 cotton was added to the list of materials of which the hose could be made and the wording changed to "hydraulic or flume hose, made in whole or in part of cotton, flax, hemp, ramie, or jute." Hydraulic hose implies hose subject to hydraulic pressure, and the term "flume hose" was added, when cotton was included among the materials, probably to cover hose not intended to be subjected to hydraulic pressure, since some cotton flume hose is used in mining to carry off water or water and gravel. The 1909 wording was retained in the act of 1913, but the rate of duty changed from 15 cents per pound to 7 cents per pound.

In the act of 1922 the wording of the paragraph was changed to: "hose, suitable for conducting liquids or gases, composed wholly or in chief value of vegetable fiber, 17 cents per pound and 10 per centum ad valorem."

TARIFF CONSIDERATIONS.

The great bulk of the hose made in the United States for use in conveying water or other liquids or gases is made of cotton and rubber. There is no competition from abroad in such hose.

A small section of the American hose industry is devoted to the manufacture of linen hose, usually unlined, and imports are mainly of this type for use as indoor fire protection.

In the act of 1913 flax yarns suitable for hose manufacture were dutiable on an ad valorem base, at 20 per cent, whereas linen hose was dutiable on a specific base, at 7 cents per pound. A pound of hose requires more than a pound of yarn, owing to a waste of about 2 per cent of the weight of the yarn in the processes of doubling and weaving. It is estimated that 1 pound of yarn is required for the manufacture of 4 feet of unlined linen hose of 2½ inches internal diameter. During recent years prices of flax yarns have been so high that the ad valorem duty of 20 per cent resulted in the equivalent specific rates, in terms of cents per pound, being higher than the 7 cents per pound assessed on the finished hose.

The Linen Association of New York, in a brief submitted to the Committee on Ways and Means in 1913, suggested that the duty on irrigating or flume hose should be on an ad valorem basis and assessed at 25 per cent ad valorem. Imports were negligible at that time, but with the increase of imports after 1917 linen hose manufacturers urged that the duty on their raw material (flax yarns) and on the hose made therefrom should be on the same basis, whether specific or ad valorem, and so adjusted that the finished product would always pay the higher rate.

In the act of 1922 there is levied on hose suitable for conveying liquids or gases a compound duty of 17 cents a pound and 10 per cent ad valorem. Such imported hose is mainly of flax and the specific portion of the above duty is intended as compensation to the domestic hose manufacturer for the duty he has to pay on his yarns, which are mainly of the 15 to 20 lea sizes. The duty on flax yarns is specific and arranged on a progressive scale; on 15 lea boiled flax yarn it is 13½ cents a pound and on 20 lea it is 16 cents a pound. The compensatory duty is higher than that on the yarn in order to allow for the waste in yarn during the process of manufacture into hose.

STATISTICAL TABLES.

TABLE 1.—*Belting and hose—Production in United States.*

[From Federal Census.]

Year.	Rubber belting and hose.	Woven belting and hose.	Total.
1909	$8,169,000	$717,000	$5,886,000
1914	14,954,000	2,837,000	17,791,000
1919	19,288,000	5,491,000	24,729,000
1921	23,561,000	4,441,000	28,002,000
1923	34,211,000	19,176,000	53,387,000

TABLE 2.—*Hydraulic or flume hose—Imports for consumption—Revenue.*

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1891	20 cents per pound	15,773	$7,044	$3,154	$0.447	44.79
1892	do	19,597	10,224	3,919	.522	38.34
1893	do	19,132	11,153	3,826	.583	34.31
1894	do	13,032	7,300	2,606	.560	35.70
1895	do	2,803	1,693	561	.604	33.12
1895	40 per cent	9,970	5,329	2,131	.534	40.00
1896	do	3,968	2,133	853	.537	40.00
1897	do	12,571	5,430	2,172	.431	40.00
1898	20 cents per pound	184	121	37	.658	30.41
1899	do	89	64	18	.719	27.81
1900	do	280	174	56	.621	32.18
1901	do	157	136	31	.866	23.08
1902	do	1,352	755	270	.558	35.81
1903	do	3,508	2,318	702	.661	30.27
1904	do	1,867	1,152	373	.617	32.42
1905	do	2,661	1,546	532	.581	34.42
1906	do	557	197	111	.354	56.55
1907	do	3,319	1,758	664	.539	37.76
1908	do	875	452	175	.517	38.72
1909	do	65	55	13	.846	23.63
1910	15 cents per pound	512	269	76	.525	28.55
1911	do	188	81	28	.432	34.81
1912	do	331	323	49	.976	15.37
1913	7 cents per pound					
1914	do	4,979	2,644	348	.531	13.18
1915	do	24,612	14,943	1,722	.607	11.52
1916	do	12,817	7,878	897	.615	11.39
1917	do					
1918	do	47,293	84,299	3,310	1.782	3.92
1919	do	49,416	100,111	3,459	2.026	3.45
1920	do	63,933	101,835	4,475	1.593	4.39
1921	do	102,111	171,932	7,147	1.684	4.16
1922	do	81,609	112,668	5,713	1.381	5.07

TABLE 3.—*India-rubber belting, hose, and packing—Domestic exports.*

Exported to—	Fiscal year—					
	1910	1911	1912	1913	1914	1915
Mexico	$406,463	$409,913	$378,391	$438,885	$269,483	$168,336
Canada	271,100	280,004	441,222	472,645	306,707	247,114
United Kingdom	212,317	186,839	210,547	249,029	346,245	279,389
Australia	127,446	112,890	127,706	186,663	182,927	132,202
Cuba	98,053	153,374	156,819	156,069	127,817	109,425
Chile	37,701	34,574	57,315	57,970	71,113	107,006
Portuguese Africa	148,110	100,163	92,134	58,605	40,698	40,069
British South Africa	114,736	176,628	201,229	171,998	223,476	300,430
Panama	130,320	100,202	103,209	182,671	140,805	37,982
Philippine Islands	52,680	106,206	93,545	79,637	50,944	58,606
Japan	35,561	127,147	74,721	77,900	106,551	38,520
All other countries	326,338	375,476	378,596	473,479	506,121	288,769
Total	1,960,825	2,163,416	2,315,424	2,605,551	2,372,887	1,807,848

Exported to—	Fiscal year.			Calendar year.		
	1916	1917	1918	1919	1920	1921
Mexico	$193,470	$265,680	$339,506	$701,460	$1,254,483	$954,269
Canada	279,342	468,126	539,506	441,730	535,515	234,513
United Kingdom	852,657	624,096	460,791	494,146	830,124	393,356
Australia	140,715	131,716	260,924	199,101	313,924	86,631
Cuba	171,456	252,110	395,524	454,908	742,669	264,961
Chile	175,879	274,164	319,259	358,326	391,815	108,490
Portuguese Africa	27,939	29,115	42,001	50,791	12,768	9,924
British South Africa	376,885	361,432	502,479	564,972	863,927	456,584
Panama	116,083	87,109	127,755	99,646	122,987	108,175
Philippine Islands	57,686	63,697	150,092	279,282	361,927	110,252
Japan	99,734	158,358	334,614	301,792	462,251	89,127
All other countries	495,107	816,781	1,105,937	2,151,306	2,506,011	1,290,655
Total	2,986,953	3,532,384	4,578,396	6,100,460	8,398,401	4,106,937

Wholesale prices, per foot.

WATER HOSE, ¾-INCH, 5-PLY.

[From Prices of Rubber and Rubber Products (W. I. B. Price Bulletin, No. 30).]

Base price	$0.0600	1916	$0.0675
1913	.0600	First quarter	.0600
First quarter	.0600	Second quarter	.0700
Second quarter	.0600	Third quarter	.0700
Third quarter	.0600	Fourth quarter	.0700
Fourth quarter	.0600	1917	.0783
1914	.0600	First quarter	.0750
First quarter	.0600	Second quarter	.0750
Second quarter	.0600	Third quarter	.0783
Third quarter	.0600	Fourth quarter	.0850
Fourth quarter	.0600	1918	.1220
1915	.0600	First quarter	.0950
First quarter	.0600	Second quarter	.1233
Second quarter	.0600	Third quarter	.1350
Third quarter	.0600	Fourth quarter	.1350
Fourth quarter	.0600		

RUBBER HOSE (WATER).

[From Quaker City Rubber Co. Catalogue, July, 1918.]

Internal diameter	Conducting hose, 2-ply.	Hydrant hose, 3-ply.	Engine hose, 4-ply.	Engine hose, 5-ply.	Engine hose, 6-ply.
1-inch	$0.33	$0.40	$0.50	$0.62	$0.75
1¼-inch	.42	.50	.62	.77	.93
1½-inch	.50	.60	.75	.93	1.12
1¾-inch	.58	.70	.87	1.08	1.30
2-inch	.66	.80	1.00	1.25	1.50
2¼-inch	.75	.90	1.12	1.40	1.68
2½-inch	.83	1.00	1.25	1.56	1.87
2¾-inch	.92	1.10	1.37	1.71	2.05
3-inch	.99	1.20	1.50	1.87	2.25
3½-inch [1]	1.15	1.40	1.75	2.18	2.62
4-inch [1]	1.32	1.60	2.00	2.50	3.00
5-inch [1]	1.65	2.00	2.50	3.12	3.75
6-inch [1]	1.98	2.40	3.00	3.75	4.50
7-inch [1]	2.31	2.80	3.50	4.38	5.25
8-inch [1]	2.64	3.20	4.00	5.00	6.00
9-inch [1]	2.97	3.60	4.50	5.62	6.75
10-inch [1]	3.33	4.00	5.00	6.25	7.50

[1] Tank hose for railroads.

Rates of duty—Hydraulic or flume hose.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1890	368	Linen hydraulic hose, made in whole or in part of flax, hemp, or jute.	20 cents per pound.
1894	273½	....do	40 per cent ad valorem.
1897	335	Hydraulic hose, made in whole or in part of flax, hemp, ramie, or jute.	20 cents per pound.
1909	345	Hydraulic or flume hose, made in whole or in part of cotton, flax, hemp, ramie, or jute.	15 cents per pound.
1913	274	....do	7 cents per pound.
1922	1007	Hose, suitable for conducting liquids or gases, composed wholly or in chief value of vegetable fiber.	17 cents per pound and 10 per cent ad valorem.

COURT AND TREASURY DECISIONS.

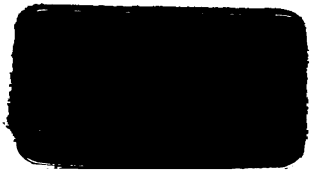
In G. A. 6032, T. D. 26351, of 1905, it was pointed out that paragraph 335 of the act of 1897 did not provide for hydraulic hose made of cotton, and such hose was held dutiable as countable cotton cloth.

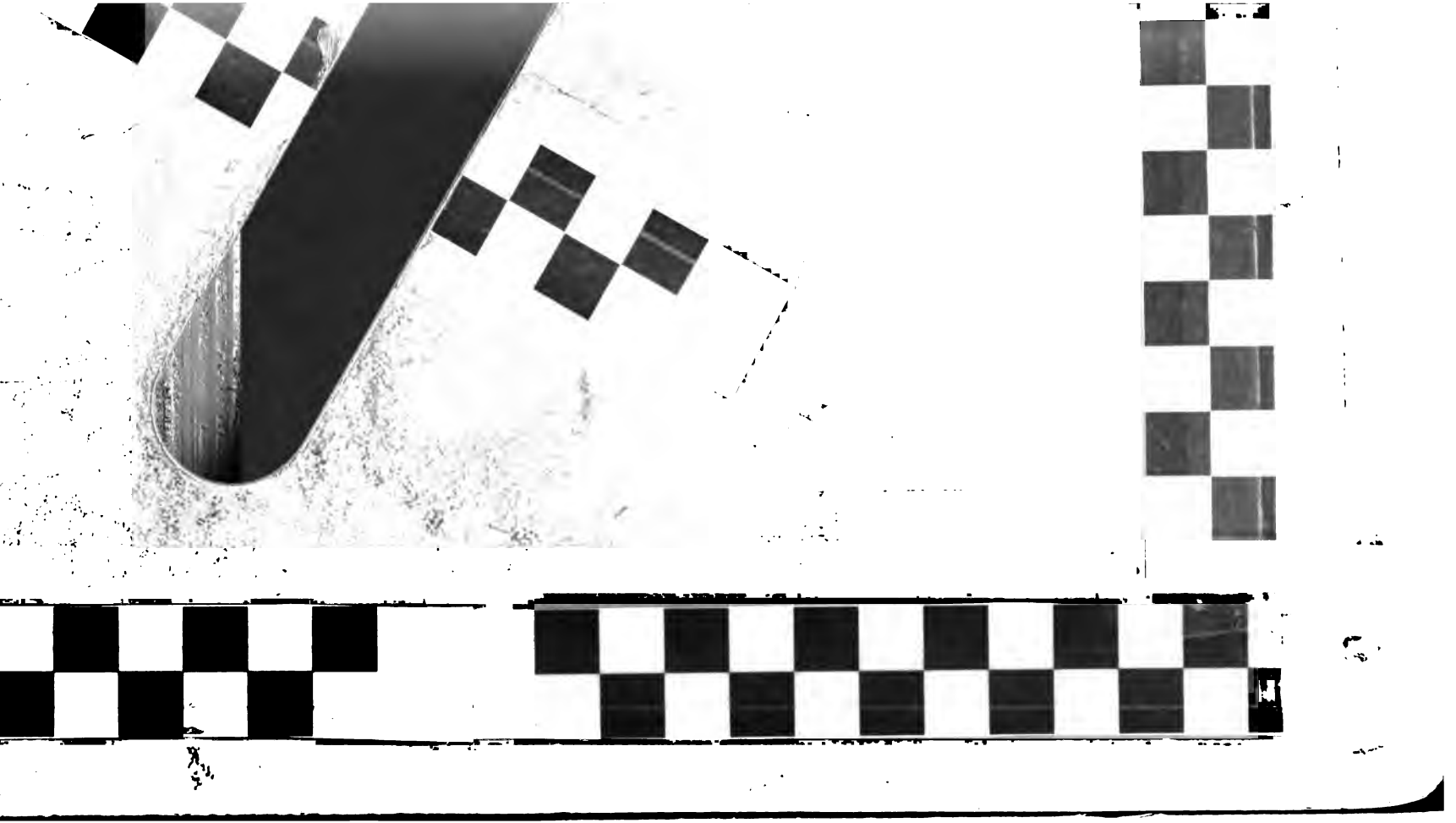
Canvas hose, not commercially known as "hydraulic hose," was held by the Treasury Department to be dutiable as a manufacture

of flax or other vegetable fiber, n. s. p. f., under paragraph 284 of the act of 1913, and not as "hydraulic hose" under paragraph 274 (Dept. Order, T. D. 34373, of 1914). In the next year the Board of General Appraisers held that seamless flax fire hose used for the conveyance of water under pressure was "hydraulic hose" within common understanding and dutiable as such under paragrah 274, and not as a manufacture of flax under paragraph 284 of that act. (G. A. 7809, T. D. 35879, of 1915.) This decision, however, was not acquiesced in by the Treasury Department (Dept. Order, T. D. 36036, of 1916), and in a later case (G. A. 8015, T. D. 36930, of 1917) the Government contended that the term "hydraulic hose" is confined in trade and commerce to a cotton hose not under 3 inches in diameter, which is used in connection with mining operations to convey water in mines and which will not hold water under working pressure. The Government furthermore contended that the hose in question was not commercially known as "hydraulic hose." Witnesses for the Government testified that they had not heard the term "hydraulic" connected with hose of this character. Some witnesses further testified that they had not heard the term "hydraulic hose" used in the trade at all, and none of them had ever seen any flume hose. The importers' witnesses testified to the contrary. Most of the witnesses agreed that the word "hydraulic" is ordinarily used in connection with anything that will withstand artificial water pressure. The Board of General Appraisers followed its former decision (T. D. 35879, *supra*) and said:

"The Government attempted to prove that the term 'hydraulic hose' is limited in trade nomenclature to a certain 'hydraulic mining hose' made of cotton and used for conveying water and minerals by gravity in mining operations, but we think the testimony falls far short of proving that there is any such general trade understanding. But even if it were proven it would be of no avail in this case, for the witnesses testified that this so-called hydraulic mining hose is composed entirely of cotton, or of cotton and rubber, and is never made of flax, hemp, ramie, or jute. Paragraph 274 provides for 'hydraulic or flume hose, made in whole or in part of cotton, flax, hemp, ramie, or jute.' The provision is not confined to cotton hose alone, and therefore Congress could not have had this hydraulic mining hose in mind when the law was enacted."

○





UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPH 264 OF THE TARIFF ACT OF 1913

HOUSEHOLD ARTICLES OF COTTON

Paragraph 264:

- **Towels and Bath Mats**
- **Cotton Quilts**
- **Cotton Blankets**
- **Polishing Cloths, Dust Cloths, Mop Cloths, Wash Rags or Cloths**
- **Sheets and Pillow Cases**
- **Cotton Batting**

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this, industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act, reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and Index," the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of W. S. Lewis of the Textile Division of the commission's staff, and of others.

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HOUSEHOLD ARTICLES OF COTTON.

SUMMARY.

Act of 1913, paragraph 264. Towels, bath mats, quilts, blankets, polishing cloths, mop cloths, wash rags or cloths, sheets, pillowcases, and batting, any of the foregoing made of cotton, or of which cotton is the component material of chief value, not embroidered nor in part of lace, and not otherwise provided for, 25 per centum ad valorem.

Description and uses.—The items in paragraph 264 are chiefly, though not exclusively, articles of household use; cotton batting, for instance, is consumed in quantities by other industries, and polishing cloths find their greatest use in the automobile accessory business. With the exception of cotton batting, which is not woven, the articles enumerated are advanced but one stage beyond the manufacture of cloth and for the most part are finished in the mills.

Domestic production.—In 1919 the domestic production of all goods enumerated in this paragraph was valued at the mills at close to $100,000,000. These commodities do not represent distinct industries, as few establishments, usually only the smaller ones, make any of them exclusively. Possibilities of standardization and the large and continuous demand for these articles tend to insure the domestic market for American manufacturers.

Tariff reclassification.—The articles in paragraph 264 of the act of 1913 were not specially provided for in any previous tariff law. They were included in the "basket clause" covering unenumerated manufactures of cotton, which in the act of 1909 made them dutiable at 45 per cent. The rate under the act of 1913 is 25 per cent. On May 28, 1921, the emergency tariff act imposed an additional duty of 7 cents per pound upon raw cotton, the staple of which is 1⅜ inches or more in length, and upon manufactures of which such cotton is the component material of chief value.

Imports.—No definite import statistics are available prior to 1914, but it has been learned from the trade that polishing cloths, a rather insignificant item, were practically all imported prior to the war, since when the manufacture has been undertaken in the United States, and that imported quilts represent a class of goods expensive to produce in this country because of the fine materials of which they are made and the ornate designs which add to their cost. Blankets and quilts constitute the major part of the imports under paragraph 264.

In the nine months from October 4, 1913, to June 30, 1914, inclusive, the first period under the reduced tariff of 1913, the combined imports of cotton towels, bath mats, quilts, blankets, polishing cloths, mop cloths, wash rags or cloths, sheets, pillowcases and batting amounted to $343,507. If these imports were maintained at the same ratio for one year the total importations would have a value of $458,009 and the duties collected would be $85,864. The highest valuation was $593,472 in 1920, with $148,086 duties collected; imports in 1921 were valued at $410,341, and the duties collected (which includes additional duties under the emergency tariff of May 27), were $106,174.

TOWELS AND BATH MATS.

General Information.

Act of 1913, paragraph 264. Towels, bath mats, * * * any of the foregoing made of cotton or of which cotton is the component material of chief value, not embroidered nor in part of lace and not otherwise provided for, 25 per centum ad valorem.

DESCRIPTION.

Cotton towels may be divided into two general classes: (1) Pile fabrics, mainly terry woven goods, which are familiarly known as Turkish or bath towels; and (2) nonpile fabrics, mainly the ordinary huck or huckaback towels.

Terry cloth, from which Turkish towels are made, is woven with one filling and two sets of warps. The pile may cover the entire cloth, but usually it is woven with plain stripes at the head ends, where the towels are to be cut and hemmed, and frequently with a border of plain stripes or Jacquard figures. Bath mats and wash cloths are also made of terry cloth. Any of these articles may be made as pile fabrics on knitting machines, but as yet this has not been done very extensively.

The term huck or huckaback towels applies to fabrics woven in patterns such as bird's-eye or honeycomb, which have yarn floats of soft heavy filling to increase the absorptivity of the cloth. Harder twisted two-ply yarns are usually employed in the selvage. Union huck towels are made of cotton and linen, and as the linen is usually of greater value, the imports come principally under Schedule J.

Toweling is sold by the piece, by the yard, or by the towel. The finished towel is usually hemmed or hemstitched, with white or colored borders.

DOMESTIC PRODUCTION.

Materials.—The cotton used in making towels is usually of low and medium grades, spun into comparatively coarse yarns; for terry cloth the warps are generally 20/2 to 30/2 yarn and the fillings 20s to 30s. Yarns for huck toweling vary considerably; the body yarns are usually singles, while the selvage ends are two-ply. The latter yarns are given as little twist as is consistent with good weaving.

Equipment.—Turkish toweling is made on a loom having two warp beams and a special attachment for the terry motion; a Jacquard loom with a similar attachment is used for patterned material. A dobby loom with one warp beam and one shuttle is used for plain white huckaback towels; colored borders require a greater number of shuttles and a somewhat more complicated mechanism.

Methods of production.—For weaving terry cloth or Turkish toweling the ground warp is wound on one beam and the pile warp on a second beam with an easing arrangement which allows the yarn to remain slack. A number of picks are inserted and then beaten up, sliding

over the ground warp which is tightly stretched, but carrying the slack pile warp with them, thus forming a series of loops bound together by the filling picks. The terry motion can be thrown out of operation by the weaver, or by an automatic arrangement the loom can be made to produce terry-woven and plain toweling alternately for any desired length. When huckaback towels are to be finished with a fringe, the loom is fitted with a fringe motion which pulls the woven towel forward, leaving a space of warp threads without filling before the weaving of the next towel length is begun.

Organization.—The manufacture of towels is usually conducted in conjunction with other lines of weaving—crash, damask, sheeting, terry cloths, and others. There are about 70 establishments reported by the Official Textile Directory as manufacturers of cotton towels of one kind or another. A few of these, engaged primarily in other manufacture, are capitalized at over $1,000,000, but for the most part those whose principal output seems to be towels are small concerns operating from 50 to 60 looms or less. Although huck and terry-woven towels are sometimes made in the same establishments, huck towels are more often made by manufacturers of crash. One establishment, making both Turkish and huck towels, produces a large proportion of the entire output of the industry.

Geographical distribution.—The industry is centered in the South and East, a few concerns being reported from the middle West and only one from the Pacific Coast. The largest production is in North Carolina; Pennsylvania, New Jersey, and Georgia rank next.

Production and consumption.—Domestic production of Turkish towels and terry-woven toweling in 1919 was valued at $14,059,000. Furthermore, towels and toweling, wash cloths, bath mats, wiping and polishing cloths (except pile fabrics), all of which were not separately reported, had a combined value of $16,786,000 for the year 1919. It is estimated that plain towels and toweling and bath mats constitute a large portion of the value of the articles enumerated. The total quantity in 1914 amounted to 75,798,907 square yards, valued at $9,805,232, which was an increase in quantity of 44 per cent over 1909. At the tariff hearing held January 26, 1921, a leading manufacturer of terry fabrics stated that this industry operated about 6,000 looms, consumed annually about 24,000,000 pounds of cotton, and had a capacity for a product valued at about $20,000,000. There are no figures relative to the production of huck towels, but apparently foreign competition can not be very serious, as manufacturers have never appeared at tariff hearings.

EXPORTS.

Export figures are not given, but Canadian statistics show importations from the United States of cotton towels valued at $296,128 in 1919, and $400,974 in 1920, and of cotton toweling valued at $61,648 in 1919, and $61,380 in 1920.

TARIFF CONSIDERATIONS.

Terry cloth in the piece is dutiable under paragraph 257 at 40 per cent, while towels made of this material are dutiable under paragraph 264 at 25 per cent.

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IMPORTS.

For the nine months ended June 30, 1914, which was the first time that imports of cotton towels and bath mats were specifically mentioned, the value amounted to $154,325 although the rate of duty on these articles had been reduced from 45 to 25 per cent ad valorem. In no year since have imports reached a value of over $109,000, the average yearly importations since the act of 1913 amounting to $90,836. Prior to 1914 the foreign goods of this character coming into the United States could have been only a small proportion of the domestic output, as under the act of 1909 imports of all unenumerated cotton manufactures, under which classification towels would fall, never reached $2,000,000.

Imports for consumption—Revenue.

Year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Number.				*Per cent.*
1914 [1]	25 per cent		$154,325	$38,570		25.00
1915 [2]	do		96,110	24,027		25.00
1916 [2]	do		65,853	16,463		25.00
1917 [2]	do		91,454	22,863		25.00
1918 [2]	do		91,776	22,944		25.00
1918 [3]	do	97,094	20,595	5,149	$0.21	25.00
1919 [4]	do	236,927	49,946	12,486	.22	25.00
1920 [4]	do	410,489	108,682	27,170	.26	25.00
1921 [4]		351,502	70,659	[5] 18,142	.20	25.68
Annual average [6]		313,163	90,836	22,765	.22	25.08

[1] Oct. 4, 1913, to June 30, 1914, inclusive, or 9-months period.
[2] Fiscal year ended June 30.
[3] July 1, 1918, to Dec. 31, 1918, inclusive.
[4] Calendar year.
[5] Includes additional duties under the emergency act of May 27, 1921.
[6] Average of 8¼ years.

For Rates of Duty and Court and Treasury Decisions, see pages 15 and 16.

COTTON QUILTS.

General Information.

Act of 1913, paragraph 264. * * * Quilts * * * made of cotton, or of which cotton is the component material of chief value, not embroidered nor in part of lace and not otherwise provided for, 25 per centum ad valorem.

DESCRIPTION.

Quilts, also termed bedspreads, coverlets, and counterpanes, are used as bed covering. There are two main types, one having two sets each of warp and of filling yarns; the other having one set of warp and one set of filling yarns.

Marseilles quilts are made with large embossed designs, one of which is complete on each quilt. The cloth is double; that is, composed of two plain woven fabrics which are not united at the ground but which are interwoven at the figures, thereby producing the raised effect which is accentuated by the use of heavy filling as wadding. If the ground is of sufficient area, the two fabrics of which it is formed may be distinguished by rubbing the plain area between the fingers. The term "satin" when applied to cotton quilts refers to the structure although it is not what is technically known as satin weave. It also is a double cloth, not in the sense that any part is made up of two distinct fabrics but in that two sets of warp and two sets of filling yarns are used in its construction. A coarse filling floats over the ground yarns to form the pattern, and under the yarns when no pattern is required, making possible a reversible cloth if the design be planned with this end in view. When the ground is visible on one side, the heavy filling yarn will be visible on the other.

Crochet quilts have nothing in common with the ordinary work made with crochet needles. The term is given to a twilled or Jacquard single fabric woven with one set of warp and one set filling of medium or fine count yarns. The cheaper grades of quilts are usually of this structure. Honeycomb and Alhambra quilts are of the same class, differing principally in the type of design used.

Dimity spreads are made from plain woven fabrics having raised threads or cords running with the warp. These are cheaper than the quilts described because they are simpler to weave. The material is woven continuously like any similar broad-loom fabric and then cut to size and hemmed.

Ripplettes.—Bedspreads made of "ripple cloth" have been held dutiable as manufactures of cotton cloth, instead of cotton quilts, though their use is the same. This "ripple cloth" is made into bedspreads called "Ripplettes," which is a class of dimity spread made of thin cloth of sheeting texture having either cords or seersucker effect. It is not made on the Jacquard quilt loom, but on a common loom having two beams with different tensions; the beam with

a looser tension feeds the yarn to the loom faster than does the other beam, and in this way causes a ripple effect in the woven cloth. The demand for this class of goods is chiefly by hospitals where cheapness and the ease with which they may be laundered make them particularly desirable.

Comfortables.—These are sometimes spoken of in the trade as quilts or comforts. They are made with two layers of fabric between which is wadding or batting. The fabrics used are standard weaves of cloth having 32 to 36 warp threads per inch, and from 64 to 88 filling threads per inch; also sateen cloths with 64 to 104 threads per inch in the warp and 96 to 180 threads per inch in the filling. It is estimated that the domestic production of comfortables in 1920 was about 2,500,000.

Quilts vary in size from 92 to 108 inches for the larger ones, down to 28 by 63 inches for the crib size.

DOMESTIC PRODUCTION.

Value of output.—Statistics show that in 1919 bedspreads and quilts (Marseilles, satin, and crochet) were produced at a value of $10,245,000.

Materials.—The yarns used are of domestic origin, ranging from 3s to 80s, both single and ply, with the lower sizes predominating.

Equipment.—Jacquard looms are required for Marseilles, satin, and crochet quilts, but of somewhat different type in each case. Dimity bedspreads and "ripple cloth" are made on a plain, or else a dobby, loom. These various looms are built in the United States.

Methods of production.—The making of quilts is only one stage beyond the manufacture of the fabric. Weaving is the most important process and presents the same problem as for similar piece goods. As a rule, quilts are woven in the gray and then bleached and finished. The process subsequent to weaving will cause a quilt to shrink about 10 per cent in the width and to gain about 1 per cent in the length. After the quilts are bleached, starched, and blued, they are cut, and hemmed, scallopped or fringed, special machines being used for each operation.

Organization.—According to the Official Textile Directory for 1920, there are 20 concerns engaged in this line of manufacture. The capitalization ranges from $10,000 to $2,500,000, but the largest part of the output is undoubtedly by the heavily capitalized establishments, as the total number of looms operated by all the small concerns is not much greater than the number in one large mill. Other goods, such as sheetings, ginghams, and cotton damask, are often produced in conjunction with the manufacture of bedspreads. In some establishments, curtains, tapestries, and upholstery goods are made, while 11 are not reported as manufacturing other fabrics. The number of looms operating on this class of goods in the United States during 1920 was approximately 1,800.

Geographical distribution.—The New England States show more looms in the industry than any other section, with North Carolina probably second and Pennsylvania third. There are a greater number of establishments in Pennsylvania than in any other State, but it is not likely that their output exceeds in value that of other States, as the mills are small and do not manufacture quilts exclusively.

COMPETITIVE CONDITIONS.

Judging from import statistics, there is little foreign competition in cotton quilts or bedspreads, for although imports from 1914 to 1920 may have been small because of abnormal conditions, imports under the act of 1909 could not have amounted to a very formidable figure, as the largest value imported under the "basket clause," which included many other articles, was $1,813,205 in 1910. An importer made the statement that competition from domestic manufacturers has become so strong that foreign goods can not compete except on the very finest quality, usually of heavy weight, and these only in small lots bought by retail stores making a feature of imported goods. The importer asserts that the English quilts are superior in quality of yarn and in weave, but that this has little effect on their salability, as the largest consumers of imported goods are the hotels, where superior quality counts for less than the cheaper price of the American goods.

IMPORTS.

In statistics of imports cotton quilts are included with cotton blankets, and this classification begins only with the act of 1913. Available figures, representing years of unusual conditions, are not a very reliable index of foreign competition. Imports of cotton quilts and blankets were highest in 1920, being valued at $387,074; in 1921 they were valued at $230,862. The amount imported, however, is so small as not to be competitive with domestic manufacture. All the present imports of quilts are satin quilts with raised Jacquard figures. Marseilles quilts have gone out of style, and a true Marseilles has not been imported for years. Domestic manufacturers practically control the home market in the cheaper grades, so that few crochet quilts are imported. England is the most important source of foreign goods. (*See* table of imports on p. 9.)

EXPORTS.

Exports are not recorded, but are larger than imports. For instance, Canadian statistics for the fiscal year ended March 31, 1921, show imports from the United States of quilts and bedspreads valued at $235,932.

For Rates of Duty and Court and Treasury Decisions, see pages 15 and 16.

COTTON BLANKETS.

General Information.

Act of 1913, paragraph 264. * * * blankets * * * made of cotton, or of which cotton is the component material of chief value, not embroidered nor in part of lace and not otherwise provided for, 25 per centum ad valorem.

DESCRIPTION.

Blankets are napped fabrics, the nap being produced by a partial cutting and raising of the fibers. The processes have been so developed that a fabric entirely of cotton may be made to resemble wool, or given what is known as a "wool finish." The springy feel of wool is sometimes obtained by a partial use of Chinese cotton, which is coarser and more crinkly than American cotton. Three distinct types of cotton blankets are commonly produced—i. e., staple blankets, which are plain woven with colored borders; wool-finish blankets, having colored borders; and Jacquard figured blankets. The staple blankets are much cheaper than those of wool finish or the Jacquard figured. The principal operations in blanket manufacture consist of weaving, napping, cutting, and binding or finishing with an overedge stitch. The common larger sizes are 64 by 78 inches and 72 by 84 inches, while the crib sizes are 30 by 40 inches and 36 by 50 inches.

DOMESTIC PRODUCTION.

Materials.—Warp yarns used in blanket manufacture are usually between 15s to 20s and the filling yarns 2 to 6s; these are of domestic production and carded only. The looms used in weaving are of domestic manufacture. In the finished blanket the warp ends are usually from 38 to 50 per inch, while the filling picks vary from 26 to 48 per inch. Other cloths are usually made in conjunction with the manufacture of blankets, some of which may be napped goods, outing flannels, felts, shirtings, shoe twills, etc.

Organization.—Although there are about 13 manufacturers of cotton blankets in the United States, the bulk of production is by three or four concerns, each having a capitalization of from $1,000,000 to $3,500,000, while many of the others are capitalized at $300,000 or more. In 1919 the production of cotton blankets, of all kinds, was valued at $32,640,000, these being produced largely in the northeastern States; two mills having a relatively small production were situated in the Carolinas.

IMPORTS.

Import figures for cotton blankets are included in the statistics for cotton quilts. Together they amounted to a maximum value

of $387,074 in 1920 and $230,862 in 1921. Most of the importations consist of medium and high quality goods, and in general they are not sold as blankets, but are made up into fancy jackets, lounging robes, bath robes, etc. These have beautifully colored yarns running through the goods, and the finished articles sell for high prices.

Quantities were given, for the first time, in the last half of the calendar year 1918; during this period 10,328 cotton quilts and blankets valued at $37,544 were imported. Prior to 1914 imports of cotton blankets consisted largely of fancy Jacquard figured goods from Germany. Imports from Japan have increased but do not amount to a substantial proportion of the whole, Japanese statistics assigning them a value of only $6,300 in 1919.

Imports for consumption—Revenue.

COTTON BLANKETS AND QUILTS.

Year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Number.				*Per cent.*
1914 [1]	25 per cent		$116,891	$29,222		25.00
1915 [2]	do		139,763	34,940		25.00
1916 [2]	do		257,668	64,417		25.00
1917 [2]	do		344,895	86,223		25.00
1918 [2]	do		252,664	63,166		25.00
1918 [3]	do	10,328	37,544	9,386	$3.63	25.00
1919 [4]	do	54,436	168,815	42,204	3.10	25.00
1920 [4]	do	86,817	387,074	96,768	4.46	25.00
1921 [4]		74,212	230,862	[5] 60,478	3.11	26.19
Annual average [6]		64,512	234,687	59,006	3.58	25.13

[1] Oct. 4, 1913, to June 30, 1914, inclusive.
[2] Fiscal year ended June 30.
[3] July 1, 1918, to December 31, 1918, inclusive.
[4] Calendar years.
[5] Includes additional duties under the emergency act of May 27, 1921.
[6] Average of 8¼ years.

EXPORTS.

Canadian statistics for the fiscal year ended March 31, 1921, give imports of cotton blankets from the United States valued at $257,622. Our exports of cotton quilts, blankets, and spreads to Canada amount to more than twice our imports of such articles from all sources.

For Rates of Duty and Court and Treasury Decisions, see pages 15 and 16.

POLISHING CLOTHS, DUST CLOTHS, MOP CLOTHS, WASH RAGS OR CLOTHS.

General Information.

Act of 1913, paragraph 264 * * * polishing cloths, dust cloths, mop cloths, wash rags or cloths * * * any of the foregoing made of cotton, or of which cotton is the component material of chief value, not embroidered nor in part of lace and not otherwise provided for, 25 per centum ad valorem.

DESCRIPTION.

Polishing cloths are small squares of napped cotton fabric, either 12 by 12 inches, or 18 by 18 inches, used in the household for polishing and dusting metal, glass, and wood; also in the harness trade and by the automobile-accessory business. Prior to 1914 these cloths were made with striped borders woven on four sides, but to-day the greatest demand is for cloths with colored borders, and hemmed only on two opposite sides. These cloths are generally made of medium and heavy weight flannels; velveteen is also employed in smaller quantity for polishing silverware. During 1920 the domestic product amounted to about 25,000 cloths, one company making more than one-half the total, the rest being produced by one or two other concerns.

Dust cloths are usually 19 by 20 inches and have a border on all four sides. In general, the border yarns are red and blue; the body fabric has white yarns in one direction, and orange-colored yarns in the other direction, giving the cloth a light orange appearance. These are made of light flannel and are not produced in the United States.

Mop cloths, sometimes called scrub cloths, are usually all cotton, and are about 20 by 20 inches in size. The warp yarns are very coarse with little twist; the filling yarns are almost one-eighth inch in diameter, and would be considered nearer a roving than a yarn. The squares are, in general, hemmed only on the two sides running parallel with the filling.

Wash rags or cloths, also called face cloths, are about 15 by 15 inches and made of terry woven cloth. The borders usually contain colored yarns; many cloths have colored yarns running in both the warp and filling directions, and woven in such a manner as to form squares throughout, and others are made with plain white yarns. The domestic manufacturers practically control the United States market.

IMPORTS.

Before the war the imports of polishing cloths and mop cloths, usually from Germany and Austria, were larger than domestic production, but to-day the domestic product is probably consumed in larger quantities than the imported.

Polishing cloths, dust cloths, mop cloths, and wash rags or cloths, classed together in the import statistics, ranged from a maximum value of $63,077, in 1914, to a minumum value of $7,023 in 1919. In 1921 the imports were valued at $31,614. It is probable that polishing cloths and dust cloths normally constituted a large part of the total. Imports were considerably increased in 1920 and 1921 over those of any year since 1915, which indicates a resumption of importation from Germany.

Imports for consumption—Revenue.

Year.	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
				Per cent.
1914 [1]	25 per cent	$63,077	$15,769	25.00
1915 [2]	do	41,501	10,375	25.00
1916 [2]	do	8,878	2,219	25.00
1917 [2]	do	12,146	3,036	25.00
1918 [2]	do	9,998	2,499	25.00
1918 [3]	do	2,611	653	25.00
1919 [4]	do	7,023	1,756	25.00
1920 [4]	do	37,823	9,431	25.00
1921 [4]	do	31,614	[5] 8,138	25.74
Annual average [6]		26,008	6,530	25.08

[1] October 4, 1913, to June 30, 1914, inclusive.
[2] Fiscal year ended June 30.
[3] July 1, 1918, to December 31, 1918, inclusive.
[4] Calendar years.
[5] Includes additional duties under the emergency act of May 27, 1921.
[6] Average of 8¼ years.

For Rates of Duty and Court and Treasury Decisions, see pages 15 and 16.

SHEETS AND PILLOWCASES.

General Information.

Act of 1913, paragraph 264. * * * sheets, pillowcases, * * * any of the foregoing made of cotton, or of which cotton is the component material of chief value, not embroidered nor in part of lace and not otherwise provided for, 25 per centum ad valorem.

DESCRIPTION.

Sheets.—Sheets are made from wide sheetings, which are plain woven cotton cloths varying in width from 36 to 90 inches; even greater widths are sometimes used. The cloth is bleached white, given a soft finish, then cut into suitable lengths and hemmed for use as bed sheets or sewed up for pillowcases. The 81-inch width probably predominates for sheets, and 45 inches for pillowcases.

Pillow tubing is woven on a loom, and differs from ordinary cloth in that it is woven as two cloths, one above the other, forming a continuous tube. This tubing is bleached, cut into required lengths, sewed up at one end, the other or open end is hemmed, and they are then ready for use as pillowcases or bolster covers. The tubing widths, as woven, vary from 18 to 24 inches, the largest consumption being 42 and 45 inches in circumference.

DOMESTIC PRODUCTION.

Materials.—In practically all sheets and pillowcases the yarn is carded only, the warp being made of about 21s and the filling from 25s to 30s; normal constructions are 64 by 64 to 72 by 72 ends per square inch. The cloth widths are usually from 36 to 90 inches, while the weights range from 3.50 to 1.30 yards, respectively, per pound. The most usual size sheet is 81 inches wide and 90 inches in length; the next largest sizes are 81 by 99, 72 by 90, 63 by 90, 90 by 99, and 90 by 108. In conjunction with the manufacture of sheeting, other cloths are produced—such as shirtings, sateens, chambrays, dress goods, drills, towels, crashes, ducks, and osnaburgs.

Production and consumption.—The domestic production is ample to supply all needs, as the value of sheets and pillowcases produced in the United States in 1919 amounted to $3,369,000; this has reference to only those mills that make up sheets and pillowcases from cloths they themselves produce. An article in the February 10, 1921, issue of the American Wool and Cotton Reporter states that there is a yearly domestic production of about 20,000,000 sheets, the total value of which is approximately $20,000,000. Pillow tubing, subsequently to be made into cases, amounted to 15,213,000 square yards, valued at $1,484,000 in 1914, and in the year 1919 the production was 12,113,000 square yards, valued at $2,555,000. Concerns primarily engaged in the production of sheetings are comparatively few; their capitalization ranges from $1,000,000 to $12,000,000 each.

Methods of production.—About one-sixth of the total production of sheets and pillowcases sold in the market is made in the mills

where the cloth is produced. There are also large concerns which buy the gray sheeting, bleach it, then have it torn and hemmed to suitable size. Smaller quantities of these goods are made, for their individual use, by women who purchase the gray or bleached sheeting from the stores.

Geographical distribution.—The sheet and pillowcase industry is not localized, although the New England States produce the bulk. A number of important establishments are located in Massachusetts, Rhode Island, New York, North Carolina, Virginia, and Alabama.

IMPORTS.

In the fiscal year 1914 the total imports of finished sheets and pillowcases not ornamented with lace or embroidery were valued at $4,836, while in the calendar year 1921 the maximum value—$38,309—was reached. These foreign goods are in demand mainly on account of their special finish and are seldom found outside the stores of leading import centers. They are sold in stores which carry a certain amount of imported goods and are willing to pay higher prices than are quoted for practically similar domestic goods. One large importing concern stated that the pillowcases were 22 by 36 inches, and sheets were 80 by 108 inches, the staple of cotton used being less than 1⅜ inches in length.

Imports for consumption—Revenue.

Year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Number.				*Per cent.*
1914 [1]	25 per cent		$4,836	$1,209		25.00
1915 [2]	do		3,901	975		25.00
1916 [2]	do		7,473	1,868		25.00
1917 [2]	do		24,322	6,080		25.00
1918 [2]	do		[3] 14,596	3,623		24.82
1918 [4]	do	6,273	7,902	1,976	$1.25	25.00
1919 [5]	do	4,911	6,134	1,533	1.25	25.00
1920 [5]	do	[6] 16,519	22,317	5,298	1.35	23.74
1921 [5]		28,320	38,309	[7] 9,691	1.35	25.30
Annual average [8]		16,008	15,732	3,909	1.30	24.87

[1] Oct. 4, 1913, to June 30, 1914, inclusive.
[2] Fiscal year ended June 30.
[3] Includes sheets and pillowcases to the value of $104 imported free of duty from the Philippine Islands.
[4] July 1, 1918, to Dec. 31, 1918, inclusive.
[5] Calendar year.
[6] Includes 427 sheets and pillowcases to the value of $1,125 imported free of duty from the Philippine Islands.
[7] Includes additional duties under the emergency act of May 27, 1921.
[8] Average of 8¼ years.

EXPORTS.

Sheets and pillowcases are not reported separately in our statistics, but Canadian statistics show imports of sheets and pillowcases from the United States for the fiscal year ended March 31, 1921, valued at $125,595.

For Rates of Duty and Court and Treasury Decisions, see pages 15 and 16.

COTTON BATTING.

General Information.

Act of 1913, paragraph 264. * * * batting * * * made of cotton, or of which cotton is the component material of chief value, not embroidered, nor in part of lace and not otherwise provided for, 25 per centum ad valorem.

DESCRIPTION AND USES.

Batting is cotton fiber in thick but lightly matted sheets. The largest quantities are probably consumed in the manufacture of comforts and mattresses, but there are many other important uses. Tailors often pad coats with batting or less frequently use it as a quilted interlining in overcoats, for which purposes it is dyed black. When a layer of batting is quilted between sheets of a thin fabric such as China silk it makes an admirably warm yet light material for coverlets and dressing gowns. Jewelers use considerable quantities of batting, either white or tinted, for packing their goods. A high-class batting with long fibers and little nap is preferred by this trade. By a removal of the natural wax which covers the cotton fiber, batting may be rendered absorbent. Large quantities are used in sanitary towels and surgical dressings.

DOMESTIC PRODUCTION.

Materials and processes.—The bulk of the cotton batting is used for stuffing and is made from low grade soft cotton waste. Finer qualities of waste or raw cotton are made into better grades. Batting material, after being opened and cleaned, is put through a card which has a special lap-forming attachment for superimposing the thin carded web to form any desired thickness. When wadding is required for special purposes, a gumming roller is employed to supply the gum or sizing; the webs are thereby made to adhere to each other. Most batting, whether gummed or ungummed, is sold without further processing. Some batting is bleached, dyed, or processed to make it absorbent, aseptic, or antiseptic. Medicated battings and battings impregnated with substances effective in cleaning and polishing are sold under proprietary and patented names and have gained a regular trade through advertising.

Organization.—In a study of the international trade in cotton batting the Department of Commerce states:[1] "The figures for batting are not given separately, but if available they would doubtless indicate that the first place in this industry also belongs to the United States." The Official Textile Directory lists 138 manufacturers of this commodity and as many of these are makers of bedding, mattresses, or carpet linings, they undoubtedly consume a large proportion of the total production. Besides the cotton batting used in industries, some is put up in small packages for the retail trade.

[1] Department of Commerce, Special Consular Reports No. 80, p. 7.

IMPORTS.

Sources and consumption.—The quantity of cotton batting imported has increased from 42,102 pounds, valued at $4,378 in 1914, to 196,498 pounds, valued at $38,897 in 1921. Most of this is made in Japan, a small amount in China, and it is all shipped direct to Hawaii, none coming to the continental United States.

Imports for consumption—Revenue.

Year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
1914 [1]	25 per cent	42,102	$4,378	$1,094	$0.104	25.00
1915 [2]	do	87,555	8,506	2,126	.097	25.00
1916 [2]	do	105,169	10,458	2,614	.099	25.00
1917 [2]	do	150,612	15,610	3,902	.104	25.00
1918 [2]	do	107,285	14,832	3,708	.138	25.00
1918 [3]	do	38,882	8,164	2,041	.210	25.00
1919 [4]	do	87,798	22,464	5,616	.256	25.00
1920 [4]	do	144,885	37,676	9,419	.260	25.00
1921 [4]		196,498	38,897	9,725	.198	25.00
Annual average [5]		116,448	19,513	4,878	.163	25.00

[1] From October 4, 1913, to June 30, 1914, inclusive.
[2] Fiscal year ended June 30.
[3] July 1, 1918, to December 31, 1918, inclusive.
[4] Calendar years.
[5] Average of 8¼ years.

EXPORTS.

Statistics show that our exports of cotton batting to Canada alone have been much greater in every year than our imports of that product from all countries, and that for the years mentioned exports almost equaled total imports. From Canadian official figures for the year ended March 31, 1921, the imports of batting from the United States were 121,920 pounds, valued at $36,637. Important cotton manufacturing countries such as Germany and England produce large quantities of cotton batting or wadding. Germany exports considerable quantities, but as yet has sent very little to the United States.

RATES OF DUTY.

Act of—		Tariff classification or description.	Rate of duty, specific and ad valorem.
Year.	Par.		
1883	324	* * * all manufactures of cotton not specially enumerated or provided for in this act, * * *.	35 per cent ad valorem.
1890	355	* * * all manufactures of cotton not specially provided for in this act.	40 per cent ad valorem.
1894	264	* * * all manufactures of cotton * * * not specially provided for in this act.	35 per cent ad valorem.
1897	322	* * * all manufactures of cotton not specially provided for in this act.	45 per cent ad valorem.
1909	332	* * * all articles made from cotton cloth, whether finished or unfinished, and all manufactures of cotton, * * * not specially provided for in this section.	45 per cent ad valorem.
1913	264	Towels, bath mats, quilts, blankets, polishing cloths, mop cloths, wash rags or cloths, sheets, pillowcases, and batting, any of the foregoing made of cotton, or of which cotton is the component material of chief value, not embroidered nor in part of lace and not otherwise provided for.	25 per cent ad valorem.
1921	17	Manufactures of which cotton of the kind provided for in paragraph 16 is the component material of chief value (in addition to the rates of duty imposed thereon by existing law. (Par. 16 provides that cotton having a staple of 1⅛ inches or more in length shall be dutiable at 7 cents per pound.)	7 cents per pound.

COURT AND TREASURY DECISIONS.

(The articles covered by paragraph 264 of the tariff act of 1913 were previously classified as manufactures of cotton.)

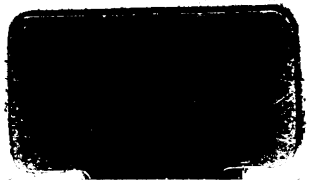
Paragraph 264 of the act of 1913 includes towels of cotton woven on Jacquard looms (G. A. 7609, T. D. 34819, of 1914); Turkish towels (G. A. 7656, T. D. 35019, of 1914, 8 Ct. Cust. Appls., 150, of 1917); bath mats and quilts of cotton cloth woven on Jacquard looms (G. A. 7748, T. D. 35577, of 1915); cotton blankets woven on Jacquard looms (Abstract 37475, of 1915); cotton drawnwork sheets and pillowcases not embroidered or in part of lace, but having at the edge of the hem threads drawn and additional threads inserted forming an ornamental openwork effect (Abstract 38774, of 1915); Turkish towels in the piece woven in patterns in such a manner that each towel is distinctly set forth and a few plain threads are inserted at regular intervals showing where the articles are to be cut apart (G. A. 7673, T. D. 35101, of 1915); polishing cloths of cotton velvet (Abstract 41604, of 1917); and cloths reported by the appraiser as dust cloths found to be polishing cloths (Abstract 42786, of 1918).

Coverings of ripple cloth to protect blankets from dirt are not "sheets" (G. A. 7963, T. D. 36689, of 1916), and sanitary napkins, of batting and gauze, labeled "Emergency towel" are not "towels" (Abstract 37626, of 1915).

Cotton quilts trimmed with fringe were held to comé within paragraph 264 (Abstract 42029, of 1918, and 43977 and 44266, of 1921). But merchandise invoiced as chamois dusters, reported by the appraiser to be dust cloths composed of cotton, was held to come within paragraph 266 of the act of 1913 (Abstract 43965, of 1920). Later, merchandise invoiced as chamois dusters and classified as articles of cotton cloth under paragraph 266 was held to come within paragraph 264 as claimed (Abstract 44433, of 1921).

Merchandise classified as Jacquard-figured upholstery goods under paragraph 258 was held dutiable under paragraph 264 as cotton towels (Abstract 45080, of 1922).

○



UNITED STATES TARIFF COMMISSION
WASHINGTON, D. C.

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPH 913 OF THE TARIFF ACT OF 1922

AND RELATED ARTICLES IN OTHER PARAGRAPHS

COTTON SMALL WARES

Paragraph 913:
- Fabrics with fast edges not exceeding 12 inches in width, and articles made therefrom.
- Tubings.
- Garters, suspenders, and braces.
- Cords, tassels, and cords and tassels.
- Spindle banding.
- Lamp, stove, and candle wicking.

Paragraph 913—continued.
- Boot, shoe, and corset lacings.
- Loom harness, healds, and collets.
- Woven labels, for garments or other articles.
- Belting for machinery.

Paragraph 1430:
- Braids, other than Barmen lace.

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PREFACE

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission. These surveys have been prepared in accordance with the provisions of the tariff act in force at the time of their preparation and cover all the articles and commodities provided for in the acts of 1913 and 1922, together with others not specially provided for.

In some cases two or more paragraphs have been combined in one survey. In doing this, industrial relationship of the articles has been followed when possible. In those instances where an article or a commodity has been treated under a preceding paragraph reference to this fact is made. In cases where one grade of an article or commodity is dutiable and another grade of the same article or commodity is on the free list the entire subject is treated under the dutiable paragraph.

A separate pamphlet listing the principal subjects investigated and reported upon has been published. It contains:

(1) An alphabetical index of the articles and commodities provided for in the tariff acts of 1913 and 1922, showing the paragraph in the acts in which the article or commodity is provided for and, if discussed under a different paragraph, the number of such paragraph.

(2) The number of the survey in which the article or commodity is discussed.

Special and miscellaneous reports, unnumbered, are also included in the index.

Thus, by the use of the index, the exact location of the survey or report relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission has had the services of A. H. McCarrel, of the textile division of the Commission's staff, and of others.

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COTTON SMALL WARES

TARIFF ACT OF SEPTEMBER 21, 1922

Par. 913. Fabrics with fast edges not exceeding 12 inches in width, and articles made therefrom; tubings, garters, suspenders, braces, cords, tassels, and cords and tassels; all the foregoing composed wholly or in chief value of cotton or of cotton and india rubber, and not specially provided for, 35 per centum ad valorem; spindle banding, and lamp, stove, or candle wicking, made of cotton or other vegetable fiber, 10 cents per pound and 12½ per centum ad valorem; boot, shoe, or corset lacings, made of cotton or other vegetable fiber, 15 cents per pound and 20 per centum ad valorem; loom harness, healds, and collets, made wholly or in chief value of cotton or other vegetable fiber, 25 cents per pound and 25 per centum ad valorem; labels for garments or other articles, composed of cotton or other vegetable fiber, 50 per centum ad valorem; belting, for machinery, composed wholly or in chief value of cotton or other vegetable fiber, or cotton or other vegetable fiber and india rubber, 30 per centum ad valorem.

SUMMARY

DESCRIPTION

Paragraph 913 is known as the small wares paragraph of the cotton schedule of the act of 1922. Although confined mainly to fabrics with fast edges, not exceeding 12 inches in width, which are generally the products of narrow-ware looms, it includes certain types of machine belting that may be woven on wide or fly-shuttle looms, and a few articles made by braiding or by twisting.

Fabrics, with fast edges, not exceeding 12 inches in width is an inclusive term used to distinguish narrow-woven fabrics from cloth, which is over 12 inches in width. Such narrow wares include, without specific mention, bandings, beltings, bindings, ribbons, strappings, tapes, webbings, etc. *Articles made therefrom* include bands, belts, brake linings, girths, gun slings, straps, webs, etc.

Tubings are tubular woven products of the narrow-ware loom, and are used in stem work in the manufacture of artificial flowers; also as bone casings in corsets, and for other purposes.

Garters, suspenders, and braces are made from narrow wares, mainly from elastic and nonelastic webbings. Some braided elastics are also used.

Cords are made by braiding, or by cabling or twisting together two, three, or more strands or threads.

Tassels are pendant ornaments terminating in tufts of loose strands or threads, matching the cords to which they are to be attached.

Cords and tassels are combinations of cords and tassels.

Spindle banding is used on spinning, spooling, and twisting frames for transmitting power to the spindles. One type is made by twisting together strands of yarn or hard roving; another by braiding, while still others coming largely into use are woven on narrow-ware looms in the form of tape.

Lamp, stove, and candle wickings are made of cotton. For candle wicking, strands of cotton yarn are twisted or braided together

Lamp and stove wicking is made on braiding machines or woven on narrow-ware looms.

Boot, shoe, and corset lacings may be round, flat, or tubular, and are generally produced on braiding machines.

Loom harness consists of a number of *healds*, which are individual units of twine, assembled on frames and used on looms in the process of weaving, each *heald* containing an eye and carrying one thread, or unit, of the warp. The harness sustains the warp properly in the loom, and through it the shedding motion is transmitted to the warp. *Collets* are cords used on the loom for holding the harness in position.

Labels for garments or other articles are woven on narrow-ware or ribbon looms with Jacquard attachments.

Belting for machinery includes narrow textile woven beltings produced on narrow-ware looms and wide textile belts woven on heavy fly-shuttle looms. They are woven in different plies and weights, depending upon the intended use. Most of these woven belts are subsequently treated to render them waterproof or to improve their wearing qualities. Some are made by cutting, folding, and stitching together several plies of cotton canvas, duck, or twill. One type, known as "rubber belting," is made by impregnating canvas, duck, or twill cotton cloth with india rubber, folding and stitching, calendering between hot rollers under pressure, and vulcanizing. Another type is treated in the same manner with balata gum, but not vulcanized. Imports of cotton transmission rope are also classed as belting for machinery.

THE DOMESTIC INDUSTRY

History.—Little is known as to the early history of the domestic cotton small-wares industry. The output was not separately recorded by the census prior to 1899. It is probable that early manufacturing was confined to elementary staple articles, such as plain tapes, and was begun by plants making yarns and cloth. As the industry developed, separate plants were built and a greater variety of articles produced. With the introduction of mercerized cotton yarns, artificial silk, and the highly developed manufacture of elastic webbings, some lines of narrow woven fabrics are now as much subject to fashion as are wide fabrics, thousands of new designs being introduced each year. The development of the manufacture of small wares as an industry, by plants engaged primarily in their production, has kept pace with that of staple textiles.

In the several States manufacturing small wares in appreciable amounts, plants were established in the following chronological order:

Rhode Island, 1824, 1864, 1873, 1883, 1885.
Maryland, 1825, 1848.
Pennsylvania, 1827, 1888, 1893.
Connecticut, 1834, 1837, 1856, 1914.
Massachusetts, 1854, 1860, 1863, 1865, 1870, 1876.
New York, 1867.
Ohio, 1875, 1897.
New Jersey, 1883, 1886, 1890, 1892, 1893.
Indiana, 1884.
Michigan, 1891.
Georgia and Illinois, one each in the year 1896.

North Carolina, 1897.
Oklahoma, 1906.

Production.—The census classification of small wares does not coincide with the group of articles listed in what is known as the "small-wares paragraph" in import statistics, the latter being wider in scope than the former. Small wares, specified as such by the census, were valued at $11,525,033 in 1914, $40,896,835 in 1919, and $26,061,193 in 1921. In addition there were produced suspenders, garters, and elastic woven goods to the value of $24,432,753 in 1914, $60,774,652 in 1919, and $44,935,467 in 1921; rubber belting to the value of $22,436,242 in 1919, and $13,068,798 in 1921. While hose is not included in the small-wares paragraph, the combined value of belting and hose other than leather and rubber was $19,176,277 in 1919 and $6,390,498 in 1921. Of the latter amount, $3,288,708 was recorded as the value of woven belting. The high values shown for 1919 are due to the enhanced prices then prevailing rather than to increase in volume of output.

TABLE 1.—*Cotton small-wares industry—Production, census years 1904–1921*

[Source: Federal Census]

	1904	1909	1914	1919	1921
Total value of products	$8,016,486	$13,174,111	$11,525,033	[1] $40,896,835	[1] $26,061,193
Cotton small wares:					
Woven—					
Linear yards				[2] 1,127,110,157	1,121,247,374
Pounds				[3]	8,343,532
Values				$18,215,958	$10,478,302
Braided—					
Linear yards				1,119,890,689	1,995,202,285
Pounds				[3]	10,112,922
Value				$19,317,624	$13,025,750
All other—					
Linear yards				53,202,089	50,818,535
Pounds				[3]	352,819
Value				$1,227,244	$568,001
Cotton waste—					
Pounds	314,538	643,791	161,700	724,138	283,843
Value	$13,020	$15,306	$5,059	$52,329	$10,169
All other cotton products:					
Pounds				[3]	1,831,776
Value	$3,637,316	$7,661,037	$6,296,530	$1,586,862	$874,524
All other products: Value	$300,908	$63,021	$295,946	$496,818	$927,985
Contract work: Value				[4]	$176,462
Tape and webbing: Value	$4,010,942	$5,338,468	$4,927,498		
Yarns for sale:					
Pounds	162,000	150,428			
Value	$54,300	$96,279			
Yarns produced:					
Pounds	[5] 2,410,268	[5] 2,637,021	[5] 9,185,556		
No. 20 and under, coarse	344,135	1,127,514			
No. 21 to No. 40, medium	2,066,133	1,432,464			
No. 41 to No. 60, fine		77,043			

[1] In addition, cotton small wares to the value of $1,572,120 in 1921, and $5,735,069 in 1919, were reported by establishments engaged in other branches of the cotton-manufactures industry, or in other industries. Of these amounts, $933,997, in 1921, and $4,182,888 in 1919, represent the value of cotton small-wares reported by establishments classified in the cotton-goods branch of this industry.
[2] Does not include spindle banding to the value of $424,000 not reported in yards.
[3] Not reported in 1919.
[4] In 1919 included in "All other products."
[5] Including that used in the further process of manufacture.

Owing to changes in the census classification of the cotton small-wares industry, the 1923 data are not comparable with those for previous years. The following tabulation of preliminary figures shows the value of articles grouped as small wares in 1923:

TABLE 1a.—*Cotton small-wares industry—Production, 1923*

[Preliminary figures]

Total value of products	$73,223,566
Belting	1,775,503
Elastic webbing	25,774,024
All other woven cotton small wares	17,633,670
Braided cotton small wares	14,659,205
All other cotton small wares	13,381,164

Of the $73,223,566 reported as the value of small wares in 1923, $33,818,643 represented the output of 54 establishments classified in 1921 as manufacturers of "Belting and hose, other than leather and rubber" and "Suspenders, garters, and elastic webbing." Deducting the $33,818,643 from the total reported for small wares gives $39,404,923, a figure which is fairly comparable with the 1921 total of $26,061,193, and which represents an increase of 51.2 per cent.

Prior to 1899 the census included the cotton small-wares industry with "cotton goods." The decrease shown from 1909 to 1914 was partly due to the inclusion in the 1909 classification of some establishments engaged in the manufacture of cotton lace, which, in 1914, were assigned to the cotton lace industry. Then, too, a number of large establishments formerly classed in the cotton small-wares industry by 1914 had so changed their products that cotton small wares no longer constituted their product of chief value. The census of 1919 showed a considerable increase, the value of products being then two and a half times greater than in 1914. The increase, however, was due in great measure to the higher prices prevailing in 1919 and is not to be attributed wholly to increased production. A decrease was shown for 1921 as compared with 1919, the value of the 1921 production falling 37.4 per cent below that for 1919.

Geographical distribution.—Cotton small wares were first separately recorded in 1899. Table 2 shows, by States, comparative statistics of the domestic industry for the census years 1899 to 1921. The figures in this table include, in addition to the data for articles covered by paragraph 913 of the tariff act of 1922, statistics for certain articles such as fancy braids (Barmen lace) dutiable under other paragraphs.

A standard textile directory (Davison's) for 1924, in the classification of cotton mills, lists domestic plants as follows:

State	Bandings	Braids	Shoe and corset laces	Shoe gorings	Narrow fabrics	Webbing, elastic and non-elastic	Wicking	Woven labels
Alabama	1	1			1		1	
California								1
Connecticut	3	10	1		8	12	3	1
Delaware		1						
Georgia	3				1	2		
Illinois		2	2		1	1	1	
Indiana					1	1	1	
Kentucky	1		1		1		1	
Maine		1						
Maryland	1	1				2		
Massachusetts	6	20	21	3	26	30	6	
Michigan					1			
Missouri			2					
New Hampshire		4	1		5	1		
New Jersey	4	6	3		3	8		9
New York		10	4		11	6	2	4
North Carolina		2	1		1	1		
Ohio	1	1	2		1	3	1	
Pennsylvania	6	15	7		26	11	2	1
Rhode Island	1	40	35		30	20	2	1
Tennessee							1	

Plants are not confined strictly to the one line indicated in the above tabulation; many large plants turn out a diversity of products.

Organization.—Tables 2 and 3 show the number of establishments, persons employed in the industry, salaries and wages, capital invested, costs of materials, and value of products, 1899 to 1921.

TABLE 2.—*Cotton small-wares industry—Comparative statistics by States, census years, 1899–1921*

[Source: Federal Census]

State	Census year	Number of establishments	Persons engaged in the industry				Primary horsepower	Expressed in thousands of dollars					
			Total	Proprietors and firm members	Salaried employees	Wage earners, average number		Capital	Salaries	Wages	Cost of materials	Value of products	Value added by manufacture
United States	1899	82	5,206	85	189	4,932	5,976	6,397	227	1,563	3,110	6,394	3,284
	1904	77	5,724	65	243	5,416	7,495	8,010	326	1,828	4,208	8,016	3,808
	1909	116	8,233	74	461	7,698	10,412	13,825	697	3,069	6,996	13,175	6,178
	1914	108	7,062	70	294	6,598	10,100	11,764	639	2,825	6,243	11,525	5,282
	1919	164	10,254	99	759	9,396	14,263	29,559	2,375	7,162	24,040	40,897	16,857
	1921	162	8,127	85	679	7,363	(1)	(1)	1,784	6,314	12,821	26,061	13,240
Massachusetts	1899	14	465	11	24	430	800	528	32	151	321	647	326
	1904	19	668	13	48	607	1,177	883	55	203	501	898	397
	1909	24	986	20	70	896	1,626	1,391	94	365	989	1,711	722
	1914	24	1,025	10	65	950	1,660	1,705	95	406	1,107	1,840	733
	1919	40	1,821	13	157	1,651	2,722	5,356	455	1,239	5,245	8,250	3,005
	1921	42	1,275	19	105	1,151	(1)	(1)	260	927	2,027	3,772	1,746
New York	1899	18	664	22	42	600	290	551	36	163	461	840	379
	1904	3	236	1	24	211	350	548	33	71	242	416	174
	1909	9	342	12	26	304	288	556	47	134	304	603	299
	1914	11	268	17	19	232	274	556	50	127	316	600	284
	1919	15	506	13	44	449	670	1,237	171	368	1,216	2,065	849
	1921	15	459	8	55	396	(1)	(1)	197	374	869	1,702	832
Pennsylvania	1899	24	1,528	34	50	1,444	969	1,946	65	455	938	2,026	1,088
	1904	21	1,565	27	64	1,474	1,041	2,169	85	488	1,110	2,163	1,053
	1909	33	2,477	24	148	2,305	1,775	4,105	222	818	2,406	4,232	1,826
	1914	26	2,002	16	106	1,880	1,798	3,298	189	738	1,801	3,458	1,657
	1919	37	2,687	33	182	2,472	2,054	7,450	572	1,694	5,696	9,364	3,668
	1921	34	2,649	20	178	2,451	(1)	(1)	505	2,118	4,408	8,910	4,501
Rhode Island	1899	16	2,270	13	48	2,209	3,313	2,877	68	736	1,096	2,380	1,284
	1904	26	2,989	13	85	2,841	4,082	3,950	130	1,000	1,996	3,945	1,949
	1909	29	3,567	8	138	3,421	5,307	6,306	221	1,456	2,578	5,191	2,613
	1914	28	3,016	16	131	2,869	5,332	5,153	206	1,265	2,387	4,394	2,007
	1919	48	4,281	23	268	3,990	7,728	13,237	928	3,274	9,992	17,824	7,832
	1921	47	2,857	21	288	2,598	(1)	(1)	629	2,255	4,544	9,315	4,771

New Jersey [1]	1919	6	220	3	27	209	258	486	68	150	400	771	371
	1921	3	61	3	9	49	(1)	(1)	31	41	24	134	110
Connecticut [1]	1919	5	143	(1)	35	108	145	334	48	78	166	416	250
	1921	5	296	(1)	36	260	(1)	(1)	46	233	247	715	468
New Hampshire [1]	1919	3	126	8	7	111	85	328	9	97	246	406	160
	1921	5	159	9	17	133	(1)	(1)	32	123	226	463	237
Illinois [1]	1919	3	283	3	19	261	220	402	68	159	520	901	372
	1921	3	526	2	13	111	(1)	(1)	30	47	143	330	187
All other	1899	10	279	5	25	249	604	495	26	58	294	501	202
	1904	8	316	11	21	283	845	460	23	66	359	594	235
	1909	21	861	10	79	772	1,416	1,467	113	286	719	1,437	718
	1914	19	751	11	73	667	1,036	1,052	99	289	632	1,233	601
	1919	5	168	3	20	145	381	729	56	103	550	900	350
	1921	8	245	3	28	214	(1)	(1)	54	156	333	720	387

[1] Figures not available.
[2] Not listed separately in 1899, 1904, 1909, and 1914.

TABLE 3.—*Cotton small-wares industry—Organization, census years, 1899–1921*

[Source: Federal Census]

	Year						Percentage of increase or decrease				
	1899	1904	1909	1914	[1] 1919	[1] 1921	1899–1904	1904–1909	1909–1914	1914–1919	1919–1921
Number of establishments	82	77	116	108	164	162	−6.1	+50.6	−6.9	+51.9	−3.0
Persons engaged	5,206	5,724	8,233	7,062	10,254	8,127	+10.0	+43.8	−14.2	+45.2	−20.7
Proprietors and firm members	85	65	74	70	99	85	−23.5	+13.8	−5.4	+41.0	−14.1
Salaried employees	189	243	461	394	759	679	+28.6	+89.7	−14.5	+92.6	−10.5
Wage earners (average number)	4,932	5,416	7,698	8,598	9,396	7,363	+9.8	+42.1	−14.3	+42.4	−23.1
Primary horsepower	5,976	7,495	10,412	10,100	14,263		+25.4	+38.9	−3.0	+41.2	
Capital	$6,397,385	$8,010,490	$13,824,772	$11,764,495	$29,559,474	[2]	+25.2	+72.6	−14.9	[3] +151.3	
Salaries and wages	1,790,067	2,154,224	3,765,968	3,463,783	9,537,260	$8,098,201	+20.3	+74.8	−8.0	+175.3	−15.9
Salaries	226,625	326,124	696,540	638,893	2,375,042	1,784,339	+43.9	+113.6	−8.3	+271.2	−24.9
Wages	1,563,442	1,828,100	3,069,428	2,824,890	7,162,218	6,313,862	+16.9	+67.9	−8.0	+153.5	−13.5
Paid for contract work	109,439	78,009	98,425	82,970	211,028		−28.7	+26.2	−15.7	+154.3	
Rent and taxes, including internal revenue	[4] 77,474	[4] 97,864	162,838	195,401	1,553,608		+26.3	+66.4	+20.0	+695.1	
Cost of materials	3,110,137	4,207,655	6,995,966	6,243,027	24,039,951	12,821,376	+35.3	+66.3	−10.8	+285.1	−47.6
Value of products	6,394,164	8,016,486	13,174,111	11,525,033	[5] 40,896,835	[5] 26,061,193	+25.4	+64.3	−12.5	+254.9	−37.4
Value added by manufacture [6]	3,284,027	3,808,831	6,178,145	5,282,006	16,856,884	13,239,817	+16.0	+62.2	−14.5	+219.1	−22.8

[1] Figures for 1921 do not include establishments reporting products below $5,000, thus excluding seven establishments employing 10 wage earners and reporting products amounting to $20,000. The figures for 1919, however, include one establishment of this class.

[2] Capital not recorded.

[3] Percentage based on data indicated by footnote 2.

[4] Exclusive of internal revenue.

[5] In addition, cotton small wares to the value of $1,572,120 in 1921 and $5,735,069 in 1919 were reported by establishments engaged primarily in other branches of cotton manufactures or in other industries. Of these amounts, $933,997 in 1921 and $4,182,888 in 1919 represent the value of cotton small wares reported by establishments classified in the cotton-goods branch of the industry.

[6] Value of products less cost of materials.

Owing to changes in classification, organization data as reported by the Census for 1923 are not comparable with 1921 and other earlier figures, and are therefore here shown separately.

TABLE 3a.—*Cotton small wares—Organization, 1923*

Number of establishments	228
Persons engaged	17,902
Proprietors and firm members	117
Salaried employees	1,398
Wage earners, average number	16,387
Horsepower	32,458
Salaries and wages	$19,733,651
Salaries	3,776,777
Wages	15,956,874
Cost of materials	38,614,695
Value of products	73,223,566
Value added by manufacture	34,608,871

Materials used.—Cotton yarns were the principal material used in the manufacture of cotton small wares in the early stages of the industry; this is still the case, but with the introduction of mercerizing, and the use of silk, artificial silk, and rubber elastic threads and strands, the products have become more diversified. As previously stated, narrow-woven fabrics are as much subject to fashion as other fabrics, many new designs being introduced in the market each year; and, aside from the dictates of fashion, new types are being constantly demanded by inventions and the arts.

Table 4 shows the materials used in the manufacture of cotton small wares in each census year since 1904.

TABLE 4.—*Cotton small-wares industry—Materials used, census years 1904–1921* [1]

[Source: Federal Census]

	1904	1909	1914	1919	1921
Total cost	$4,207,655	$6,995,966	$6,243,027	$24,039,951	$12,821,376
Cotton, domestic:					
Bales	6,676	6,331	20,192	10,209	(2)
Pounds	3,362,434	3,082,270	9,810,156	4,966,774	(2)
Cost	$390,805	$359,106	$964,679	$1,580,159	(2)
Silk:					
Pounds	23,924	100,662	(3)	(3)	(3)
Cost	$98,617	$358,894	(3)	(3)	(3)
Yarns:					
Cotton—					
Pounds	13,816,858	16,346,525	14,716,299	22,594,262	(2)
Cost	$3,009,717	$4,700,513	$3,598,598	$16,846,808	(2)
Silk and spun silk—					
Pounds	19,090	37,617	86,943	56,468	(2)
Cost	$58,624	$112,912	$313,439	$475,996	(2)
Artificial silk—					
Pounds	(4)	(4)	78,344	196,279	(2)
Cost	(4)	(4)	$148,790	$844,088	(2)
Other yarns—					
Pounds	389,148	490,013	326,520	23,406	(2)
Cost	$66,975	$252,385	$199,255	$24,944	(2)
Waste:					
Pounds	156,000	625,526	121,175	201,960	(2)
Cost	$12,480	$59,138	$9,466	$35,466	(2)
Starch: Cost	$15,565	$18,681	$5,123	$71,020	(2)
Chemicals and dyestuffs: Cost	$36,032	$77,337	$75,503	$237,186	(2)
All other materials: Cost	$518,840	$1,065,060	$938,774	$3,930,280	(2)

[1] Figures for 1923 are omitted as they are not comparable because of changes in classification.
[2] Figures for subdivision not available.
[3] Included in "All other materials," in order to avoid disclosure of individual operations.
[4] Not reported separately.

EXPORTS

Exports of cotton small wares are not shown separately, but they are known to be larger than imports. The extent of the export trade is indicated by Table 5, which gives Canadian imports of cotton small wares from the United States for the fiscal years ended March 31, 1911 to 1924, inclusive. In 1924 more than 72 per cent of cotton small wares imported by Canada came from the United States.

Exports of rubber belting from the United States are widely distributed.

TABLE 5.—*Cotton small wares: Canadian imports from the United States of sundry small wares and percentage which the imports of each article or group of articles forms of total Canadian imports of such article, 1911–1924*

[Source: Annual Report of the Trade of Canada]

Canadian classification	Fiscal year ended Mar. 31—					
	1911		1912		1913	
	Value	Per cent	Value	Per cent	Value	Per cent
Ribbons, undyed, for typewriter ribbons	----------	----------	----------	----------	$4,095	35.4
Belting of all kinds, except rubber and leather	$79,068	28.3	$111,602	30.5	158,720	30.8
Boot, shoe, shirt, and stay laces, any material	18,376	8.3	18,232	9.2	42,788	15.7
Braces, suspenders, and finished parts of	43,896	64.5	43,174	68.5	63,848	71.6
Lamp wicks	9,185	59.0	14,423	73.2	14,503	58.7
Tape of cotton, not over 1¼ inches in width	----------	----------	----------	----------	----------	----------
Tape, not dyed or colored	21,062	46.0	14,918	36.7	27,480	52.1
Webbing, elastic, over 1 inch wide	237,590	76.9	265,794	74.8	262,858	76.7
Webbing, nonelastic, for suspenders	6,191	96.5	15,270	93.5	6,864	72.9
Tape, dyed or colored	1,447	13.8	2,423	29.5	----------	----------
Fabric of duck, cotton, or linen, circular woven, seamless, for the manufacture of hose	88,683	94.7	106,960	94.0	98,600	96.6

	1914		1915		1916	
	Value	Per cent	Value	Per cent	Value	Per cent
Ribbons, undyed, for typewriter ribbons	$3,932	30.4	$10,733	100.0	$19,846	99.7
Belting of all kinds, except rubber and leather	185,045	38.7	89,113	35.9	108,360	43.5
Boot, shoe, shirt, and stay laces, any material	35,959	14.4	49,910	35.2	141,467	80.9
Braces, suspenders, and finished parts of	67,248	75.5	37,495	68.2	36,716	79.8
Lamp wicks	20,630	69.2	20,198	78.6	23,227	86.2
Tape of cotton, not over 1¼ inches in width	----------	----------	6,679	33.7	48,429	48.4
Tape, not dyed or colored	24,163	40.7	8,003	33.1	16,124	86.5
Webbing, elastic, over 1 inch wide	166,609	81.6	142,818	87.7	186,069	93.0
Webbing, nonelastic, for suspenders	23,274	75.5	4,070	99.5	3,490	98.2
Tape, dyed or colored	5,383	28.3	5,005	14.5	6,485	38.3
Fabric of duck, cotton or linen, circular woven, seamless, for the manufacture of hose	78,782	100.00	71,635	96.2	57,244	95.5

TABLE 5.—*Cotton small wares: Canadian imports from the United States of sundry small wares and percentage which the imports of each article or group of articles forms of total Canadian imports of such article, 1911–1924*—Continued

Canadian classification	Fiscal year ended Mar. 31—					
	1917		1918		1919	
	Value	Per cent	Value	Per cent	Value	Per cent
Ribbons, undyed, for typewriter ribbons	$25,349	100.0	$38,909	100.0	$15,963	100.0
Belting of cotton					81,921	81.6
Belting of all kinds, except rubber and leather	219,947	46.6	233,938	55.0		
Boot, shoe, shirt, and stay laces, any material	271,886	94.4	145,721	52.8	227,005	72.3
Braces, suspenders, and finished parts of	97,492	92.4	71,280	92.8	96,422	96.4
Lamp wicks	43,854	88.2	32,775	87.2	61,658	93.9
Tape of cotton, not over 1¼ inches in width	129,551	61.0	120,265	69.1	222,155	72.6
Tape, not dyed or colored	34,612	80.5	21,098	76.7	31,350	92.2
Webbing, elastic, over 1 inch wide	284,898	96.0	184,338	96.5	298,560	97.9
Webbing, nonelastic, for suspenders	22,421	99.8	5,977	100.0	3,316	100.0
Tape, dyed or colored	13,264	77.1	6,929	62.4	16,199	79.4
Fabric of duck, cotton or linen, circular woven, seamless, for the manufacture of hose	90,017	100.0	75,470	99.8	161,406	100.0

	1920		1921		1922	
	Value	Per cent	Value	Per cent	Value	Per cent
Ribbons, undyed, for typewriter ribbons	$52,543	99.1	$58,395	60.3	$14,408	43.5
Belting of cotton	121,554	70.6	174,717	83.9	56,816	71.2
Boot, shoe, shirt, and stay laces, any material	247,833	67.0	188,246	52.9	84,704	68.9
Braces, suspenders, and finished parts of	162,855	89.4	89,348	65.8	89,288	73.5
Lamp wicks	69,811	98.2	56,447	85.5	30,628	92.8
Tape of cotton, not over 1¼ inches in width	213,487	67.1	168,780	47.3	137,815	67.2
Tape, not dyed or colored	88,173	98.2	100,744	92.0	59,110	94.5
Webbing, elastic, over 1 inch wide	527,444	97.4	526,127	90.3	354,066	94.6
Webbing, nonelastic, for suspenders	6,128	99.4	5,089	77.5	7,458	100.0
Tape, dyed or colored	31,582	78.1	20,470	63.2	18,718	76.4
Fabric of duck, cotton or linen, circular woven, seamless, for the manufacture of hose	130,430	87.7	186,554	91.0	90,410	100.0

Canadian classification	1923		1924	
	Value	Per cent	Value	Per cent
Ribbons, undyed, for typewriter ribbons	$21,370	38.8	$9,400	17.4
Belting of cotton	56,122	71.1	57,962	64.3
Boot, shoes, shirt, and stay laces, any material	110,527	72.3	82,119	58.9
Braces, suspenders, and finished parts of	59,561	72.9	65,316	70.5
Lamp wicks	31,970	80.0	38,190	90.6
Tape of cotton, not over 1¼ inches in width	143,654	52.7	132,354	48.1
Tape, not dyes, or colored	28,354	78.4	17,955	76.0
Webbing, elastic, over 1 inch wide	333,518	95.0	291,988	93.5
Webbing, nonelastic, for suspenders	4,344	100.0	4,705	95.5
Tape, dyed or colored	20,885	87.5	23,437	98.0
Fabric of duck, cotton, or linen, circular woven, seamless, for the manufacture of hose	142,705	100.0	170,207	98.0

IMPORTS

Scope of cotton small-wares paragraph.—The tariff chart herewith presented shows the articles specifically mentioned in the cotton small-wares paragraphs of the several tariff acts since 1883. It will be noted that the tendency has been to widen the scope of the paragraph to include all cotton small wares and manufactures therefrom. The act of 1922 incorporates in paragraph 913 the most comprehensive grouping yet effected. Except where it was deemed necessary to take precaution against litigation, or where the adoption of special rates was desired, eo nomine designation has been intentionally omitted. Under the inclusive wording "fabrics with fast edges not exceeding 12 inches in width, and articles made therefrom" provision is made for narrow wares specifically mentioned in previous tariff acts, such as bandings, bindings, beltings, ribbons, tapes, and webbing. Braids, galloons, and gimps, which were included with small wares in the acts of 1883, 1890, and 1894, are separately provided for in paragraph 1430 of the act of 1922. Tire fabric, or fabric suitable for pneumatic tires, included in the small-wares paragraph of the acts of 1909 and 1913, is specifically provided for in paragraph 905 of the act of 1913 as a cloth or wide fabric.

Tariff chart—Articles specially mentioned in the cotton small-wares paragraphs of each tariff act since 1883

Articles classed as small wares	Tariff act						
	Mar. 3, 1883 (par. 324)	Oct. 1, 1890 (par. 354)	Aug. 27, 1894 (par. 263)	July 24, 1897 (par. 326)	Aug. 5, 1909 (par. 330)	Oct. 3, 1913 (par. 262)	Sept. 21, 1922 (par. 913)
Fabrics, with fast edges, not exceeding 12 inches in width						•	•
Articles made therefrom							•
Tubings				•	•		•
Garters				•	•	•	•
Suspenders and braces	•	•	•	•	•	•	•
Cords	•	•	•	•		•	•
Tassels						•	•
Cords and tassels						•	•
Spindle banding			•	•	•	•	•
Lamp or candle wicking			•	•	•	•	•
Stove wicking				•	•	•	•
Boot, shoe, or corset lacings		•	•	•	•	•	•
Loom harness				•	•	•	•
Healds				•	•	•	•
Collets					•	•	•
Labels for garments or other articles				•	•	•	•
Belting, for machinery					•	•	•
Tire fabric or fabric suitable for pneumatic tires					•	•	
Bone casings				•	•	•	
Bandings				•		•	
Bindings				•		•	
Beltings				•		•	
Belts						•	
Ribbons				•			
Tapes			•	•			
Lining for bicycle tires			•	•			
Webs				•			
Webbing	•	•	•	•			
Braids	•	•	•				
Galloons	•	•	•				
Gimps	•	•	•				
Goring	•	•	•				

TABLE 6.—*Total small wares of cotton (or other vegetable fiber)*[1]*—Imports for consumption—Revenue, 1891–1924*

Year	Value	Duty collected	Actual and computed ad valorem rate
Fiscal:			*Per cent*
1891 [2]	$399,368	$187,240	46.88
1892	638,215	295,332	46.27
1893	817,332	377,152	46.14
1894	712,405	330,551	46.40
1895 [3]	154,023	64,887	42.13
1895 [4]	1,214,291	546,431	45.00
1896	1,204,339	541,952	45.00
1897	1,353,765	609,194	45.00
1898 [5]	432,916	194,411	44.91
1898 [6]	134,059	82,979	61.90
1899	486,670	231,701	47.61
1900	617,818	290,777	47.07
1901	700,201	325,122	46.43
1902	658,978	301,057	45.69
1903	734,125	335,570	45.71
1904	544,800	251,766	46.21
1905	564,401	258,698	45.84
1906	618,891	283,602	45.82
1907	795,480	364,542	45.83
1908	634,595	289,446	45.61
1909	606,293	276,970	45.68
1910	859,097	317,613	36.97
1911	701,568	248,144	35.37
1912	387,623	151,422	39.06
1913	425,568	161,558	37.96
1914 [7]	104,061	37,762	36.29
1914 [8]	823,762	181,095	21.98
1915	626,617	135,966	21.70
1916	583,008	117,100	20.09
1917	603,720	114,345	18.94
1918	1,190,283	239,678	20.14
Calendar:			
1918 [9]	854,392	178,285	20.87
1919	959,657	184,816	19.26
1920	1,280,679	239,734	18.72
1921	[10] 665,966	146,003	21.92
1922 [11]	[12a]718,141	155,821	21.70
Annual average [12]	775,222	282,773	36.48
1922 [14]	220,977	79,139	35.81
1923	1,018,697	369,639	36.28
1924 [15]	797,312	280,322	35.03

[1] Inclusive total of all small wares imported under paragraph 262 of the act of 1913 and of similar small wares imported under preceding acts.
[2] From Oct. 6, 1890, to June 30, 1891, inclusive.
[3] From July 1, 1894, to Aug. 27, 1894, inclusive.
[4] From Aug. 28, 1894, to June 30, 1895, inclusive.
[5] From July 1, 1897, to July 24, 1897, inclusive.
[6] From July 25, 1897, to June 30, 1898, inclusive.
[7] From July 1, 1913, to Oct. 3, 1913, inclusive.
[8] From Oct. 4, 1913, to July 30, 1914, inclusive.
[9] From July 1 to Dec. 31, 1918, inclusive.
[10] Includes imports valued at $86,060 paying duty of $24,188, under provisions of emergency tariff act of May 28, 1921.
[11] From Jan. 1 to Sept. 21, 1922, inclusive.
[12] Includes imports valued at $173,757 paying duty of $46,245 under provisions of emergency tariff act of May 27, 1921.
[13] For 11,673 days, equivalent to 32 years, nearly.
[14] From Sept. 22 to Dec. 31, inclusive.
[15] Preliminary figures.

TABLE 7.—*Cotton small wares—Imports for consumption, by articles, 1919–1924*

	1919	1920	1921	1922 [1]	1922 [2]	1923	1924 [3]
Fabrics, with fast edges, not exceeding 12 inches in width	$66,613	$69,328	$72,572	$76,684	$49,684	[4] $315,173	$173,074
Tubings						234	396
Garters, suspenders, and braces	22,364	31,945	136,776	103,901	8,639	62,075	61,649
Cords, tassels, and cords and tassels	17,582	45,693	28,984	17,530	4,163	21,510	26,343
Lamp, stove, or candle wicking, and spindle banding	7,930	8,045	6,234	5,481	1,875	12,006	7,875
Boot, shoe, and corset lacings	1,640	11,555	10,912	3,777	676	2,734	3,920
Loom harness, healds, and collets	16,193	12,188	13,812	10,988	7,527	11,868	6,435
Labels for garments and other articles	5,831	35,466	38,304	126,305	30,488	218,295	139,970
Belting for machinery	550,970	804,353	232,169	265,189	59,257	374,802	377,650

[1] Jan. 1 to Sept. 21, inclusive.
[2] Sept. 22 to Dec. 31, inclusive.
[3] Preliminary figures.
[4] Fabrics not exceeding 12 inches in width and articles made therefrom.

COMPETITIVE CONDITIONS

The domestic small-wares industry is firmly established. Competitive imports are mainly from Germany, and consist of ribbon and other narrow-ware loom products. Germany has a highly developed industry, centering in Barmen and vicinity, and, as compared with the United States, has cheaper dyes and lower labor costs.

RATES OF DUTY

TABLE 8.—*Cotton small wares (general, inclusive)—Rates of duty, 1883-1922*

Act of—	Paragraph	Tariff classification or description	Rate of duty
1883	324	Cotton cords, braids, gimps, galloons, webbing, goring, suspenders, braces, * * *.	35 per cent ad valorem.
1890	354	Cotton cords, braids, boot, shoe, and corset lacings	35 cents per pound.
		* * * cotton gimps, galloons, webbing, goring, suspenders and braces, any of the foregoing which are elastic or nonelastic.	40 per cent ad valorem.
		Provided, That none of the articles included in this paragraph shall pay a less rate of duty than.	Do.
1894	263	Cords, braids, boot, shoe and corset lacings, tapes, gimps, galloons, webbing, goring, suspenders and braces, woven, braided, or twisted lamp or candle wicking, lining for bicycle tires, spindle binding, any of the above made of cotton or other vegetable fiber and whether composed in part of India rubber or otherwise.	45 per cent ad valorem.
1897	320	Bandings, beltings, bindings, bone casings, cords, garters, lining for bicycle tires, ribbons, suspenders, and braces, tapes, tubings and webs or webbing, any of the foregoing articles made of cotton or other vegetable fiber, whether composed in part of india-rubber or otherwise, and not embroidered by hand or machinery.	Do.
		* * * spindle banding, woven, braided or twisted lamp, stove, or candle wicking made of cotton or other vegetable fiber.	10 cents per pound and 15 per cent ad valorem.
		* * * loom harness or healds made of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value.	50 cents per pound and 25 per cent ad valorem.
		* * * boot, shoe, and corset lacings made of cotton or other vegetable fiber.	25 cents per pound and 15 per cent ad valorem.
		Labels, for garments or other articles, composed of cotton or other vegetable fiber.	50 cents per pound and 30 per cent ad valorem.
1909	330	Bone casings, garters, tire fabric or fabric suitable for use in pneumatic tires, suspenders and braces, and tubing, any of the foregoing made of cotton or other vegetable fiber, and india rubber, or of which cotton or other vegetable fiber is the component material of chief value, and not embroidered by hand or machinery.	45 per cent ad valorem.
		* * * spindle banding, woven, braided or twisted lamp, stove, or candle wicking made of cotton or other vegetable fiber.	10 cents per pound and 15 per cent ad valorem.
		* * * loom harness, healds or collets made of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value.	50 cents per pound and 25 per cent ad valorem.

TABLE 8.—*Cotton small wares (general, inclusive)—Rates of duty, 1883–1922*—Continued

Act of—	Paragraph	Tariff classification or description	Rate of duty
1909	330	* * * boot, shoe, and corset lacings made of cotton or other vegetable fiber.	25 cents per pound and 15 per cent ad valorem.
		* * * labels, for garments or other articles, composed of cotton or other vegetable fiber.	50 cents per pound and 30 per cent ad valorem.
		* * * belting for machinery made of cotton or other vegetable fiber and india rubber, or of which cotton or other vegetable fiber is the component material of chief value.	30 per cent ad valorem.
	349	* * * bands, bandings, belts, beltings, bindings, cords, * * * ribbons, tapes, webs, and webbings; * * * all of the foregoing, composed wholly or in chief value of cotton, * * * or other vegetable fiber, or of cotton, * * * or other vegetable fiber and india rubber, or of cotton, * * * or other vegetable fiber, india rubber, and metal, and not elsewhere specially provided for in this section. *Provided*, That no article composed wholly or in chief value of one or more of the materials or goods specified in this paragraph, shall pay a less rate of duty than the highest rate imposed by this section upon any of the materials or goods of which the same is composed: * * *	60 per cent ad valorem
13	262	Bandings, belts, beltings, bindings, bone casings, cords, tassels, cords and tassels, garters, tire fabric or fabric suitable for use in pneumatic tires, suspenders and braces, and fabrics with fast edges not exceeding 12 inches in width, all of the foregoing made of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value, or of cotton or other vegetable fiber and india rubber, and not embroidered by hand or machinery; spindle banding, woven, braided, or twisted lamp, stove, or candle wicking made of cotton or other vegetable fiber; loom harness, healds, or collets made of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value; boot, shoe, and corset lacings made of cotton or other vegetable fiber; and labels for garments or other articles, composed of cotton or other vegetable fiber.	25 per cent ad valorem
		* * * belting for machinery made of cotton or other vegetable fiber and india rubber, or of which cotton or other vegetable fiber is the component material of chief value.	15 per cent ad valorem.
1922	913	Fabrics with fast edges not exceeding 12 inches in width, and articles made therefrom; tubings, garters, suspenders, braces, cords, tassels, and cords and tassels; all the foregoing composed wholly or in chief value of cotton or of cotton and india rubber, and not specially provided for.	35 per cent ad valorem
		* * * spindle banding, and lamp, stove, or candle wicking, made of cotton or other vegetable fiber.	10 cents per pound and 12½ per cent ad valorem.
		* * * boot, shoe, or corset lacings, made of cotton or other vegetable fiber.	15 cents per pound and 20 per cent ad valorem.
		* * * loom harness, healds, and collets, made wholly or in chief value of cotton or other vegetable fiber.	25 cents per pound and 25 per cent ad valorem.
		* * * labels for garments or other articles, composed of cotton or other vegetable fiber.	50 per cent ad valorem.
		* * * belting, for machinery, composed wholly or in chief value of cotton or other vegetable fiber, or cotton or other vegetable fiber and india rubber.	30 per cent ad valorem.

NOTE.—The words "spindle binding," appearing in paragraph 263 of the act of 1894 as reproduced in Table 8 above, is obviously a typographical error. The correct spelling is of course "banding."

I. NARROW FABRICS—FABRICS WITH FAST EDGES NOT EXCEEDING 12 INCHES IN WIDTH, AND ARTICLES MADE THEREFROM

General Information

DESCRIPTION

"Fabrics with fast edges not exceeding 12 inches in width, and articles made therefrom" is the inclusive term used in paragraph 913 of the tariff act of 1922 to describe narrow wares as distinguished from cloth, which may be defined as woven fabrics over 12 inches in width.

Narrow wares of cotton include tapes and webbings, plain or fancy; typewriter ribbons woven with fast edges; bandings; beltings; bindings; strappings; elastic webbings; surgical webbings; automobile brake linings, etc. Manufactures of narrow wares include hat bands; belts; girdles for women and children; boot and shoe straps; baby bands; cigar bands; back bands; saddle girths; gun slings; cartridge belts, etc. Excluded from the above, but only by reason of specific mention, are garters, suspenders, and braces; woven spindle banding; woven wicking; woven labels; and woven belting, not exceeding 12 inches in width, used in connection with machinery. Narrow strips cut from cotton cloth, such as cut tapes used for ordinary typewriter ribbons, are excluded from the classification by reason of the specification as to fast edges; imports of these are dutiable at the rates provided for the cloth from which they are cut.

Narrow wares of cotton include not only plain goods but many fancy and special fabrics. These, together with innumerable articles made from narrow wares, are subject to the continuous demands of fashion for new styles and variations. Manufacturers are therefore necessarily equipped to supply wide ranges of widths, weights, and designs. One of the largest domestic companies in this business is reported to have in its files the details and samples of over forty thousand distinct articles.

EQUIPMENT

In 1899 there were reported 42,600 spindles; in 1904, 39,530; and in 1909, 29,808. The total of 4,973 looms in 1919 and 160,007 divisions showed an average of 32 divisions for each narrow-ware loom.

Table 9 shows the equipment used in the cotton small-wares industry in the years 1914 and 1919.

TABLE 9.—*Cotton narrow wares—Equipment, census years 1914 and 1919* [1]

[Source: Federal Census]

	Total	Massachusetts	New Jersey	New York	Pennsylvania	Rhode Island	All other States
1914							
Spindles	71,758	8,934	.....	.....	.....	61,072	1,752
Looms	3,907	730	.....	.....	.....	1,581	381
Braiding machines	36,607	8,445	.....	.....	.....	12,330	4,895
1919							
Spindles	[2] 78,779	15,880	.....	1,177	.....	58,952	2,770
Producing spindles	58,360	10,632	.....	120	.....	[3] 45,504	2,104
Mule spinning	2,680	.....	.....	120	.....	2,560	.....
Frame spinning	55,680	10,632	.....	.....	.....	42,944	2,104
Doubling and twisting spindles	20,419	5,248	.....	1,057	.....	13,448	666
Webbing and ribbon looms: Number	4,973	845	48	201	1,562	1,905	412
Aggregate number of divisions	160,007	24,709	1,536	8,256	55,285	60,329	9,852
Braiding machines: Number	62,630	13,333	1,498	5,957	12,256	27,275	2,311
Aggregate number of carriers	1,672,081	333,345	28,059	206,918	374,789	660,992	67,978

[1] Not shown by census reports for 1921 and 1923.
[2] Mills in this industry reported 71,758 spindles in 1914; 29,808 in 1909; 39,530 in 1904; and 42,600 in 1899.
[3] Not including 1,600 mule-spinning spindles idle entire year.

In establishments producing cotton narrow wares, cotton yarns are the principal material. Although plants turning out diversified products in many instances spin coarse and medium yarns for their own use, the great majority of firms engaged in the manufacture of narrow-woven fabrics purchase all yarns used. For this reason no statistics are available for any other machinery than the narrow-ware looms and spindles, which prior to 1921 include twister spindles. The small-wares classification of the census includes articles of several types made by braiding; statistics show the number of braiding machines, with carriers, in use. These figures are shown in Section XI.—Braids, other than Barmen lace.

Census reports state that a number of large establishments previously classed in this industry had so changed their production by 1914 that cotton small wares had ceased to be their product of chief value.

In four of the largest domestic plants manufacturing diversified cotton small wares, including elastic and nonelastic webbings, braids, etc., all the equipment, both looms and braiders, are of domestic manufacture.

MATERIALS USED

In the general run of heavy narrow wares, such as narrow textile beltings, webbings, coarse tapes, elastic webbings, reins, etc., cotton yarns of low and medium counts are used. Although the majority of manufacturers purchase all yarns used, some manufacture the yarns for use in their products.

One of the oldest and largest plants, on a diversified line, produces its coarser yarns, up to No. 16, but purchases yarns above that number. This company does not import any yarns, but buys them, as well as all rubber strands used, from domestic manufacturers.

Another large company, operating three plants, also manufactures the coarser yarns for its own consumption, using an average of 150 bales of cotton per week. This company uses yarns of mercerized

cotton, artificial silk, and silk, and purchases its artificial silk from domestic manufacturers.

In another large narrow-wares plant, equipped with over 1,200 narrow-ware looms in addition to its braiding machinery, neither carding nor spinning is done, the company buying all yarns used, whether of cotton, mercerized cotton, linen, worsted, jute, silk, or artificial silk. Using cotton yarns ranging from 4s to 200s, two-ply, this firm purchases domestic yarns in the lower numbers and imports from England those above the range of the domestic market, from 120s two-ply to 200s two-ply, some in the grey but the greater portion gassed, bleached, and prepared. Some years ago this concern bought, for use in its elastic fabrics, large lots of imported Egyptian cotton yarns, 78s two-ply, but now, owing to the progress made in the fine cotton yarn industry in the South, it uses southern 80s two-ply. The fine imported yarns necessarily used in weaving the finest types of narrow wares are fully described in Section IX.—Labels for garments.

In the domestic market it is possible to obtain 100s two-ply gassed and bleached yarn that will weave well, and will be white, but such yarn is not "prepared." In the operation of "preparing," the yarn is rendered smooth and flexible, and at the same time is condensed by passing it a number of times between heavy calender rolls. The yarn may or may not be gassed. It is usually lubricated during the process, and for certain purposes it is also treated with sizing. All "prepared" yarns are imported from England as the "preparing" process is not used in this country. At present the firm referred to in the preceding paragraph is using no polished yarn ("Eisen Garn") or linen. Its pure silk materials are purchased in the domestic market and its fast-dyed red and blue yarns are imported. It uses artificial silk for filling in the weaving of elastic garter webbings and neckties. With the purpose of meeting competion in its exports to certain countries, this firm imports its artificial silk from Belgium, France, Italy, England, Switzerland, and the Netherlands, and obtains a drawback on the duty paid on the imported material used in its exports. The imported artificial silk arrives in the bleached condition and is dyed in the plant. Its quality is satisfactory, and its landed price is about the same as that quoted for the domestic article. The firm imports tinsel threads, but uses domestic elastic rubber strands.

To sum up: As used in the domestic manufacture of cotton small wares, the cotton yarns, in the coarser numbers, single and ply, are domestic products, and in some cases are produced in the small-wares plants. Grey, bleached, and mercerized cotton yarns, in the finer numbers, up to 100s, are generally of domestic manufacture. In numbers still finer, up to 200s two-ply, gassed, bleached, and prepared, manufacturers depend upon imports, domestic spinners not caring to accept orders for these. In products requiring fast Turkey-red and blue yarns that will stand bleaching and laundering, without fading or bleeding, imported materials are preferred. For special purposes, black polished yarn ("Eisen Garn" or "iron yarn") is imported. Metal tinsel threads are also imported, while rubber elastic strands are purchased in the domestic market. Artificial silk yarn is imported by some manufacturers under drawback privileges, to be taken advantage of in subsequent exports. While some

domestic manufacturers claim superior qualities for imported artificial silk, others find the domestic article satisfactory. Artificial straw, a product of cellulose, is both imported and of domestic manufacture.

METHODS OF PRODUCTION

Fabrics with fast edges, not exceeding 12 inches in width, are woven on narrow-ware looms, which produce a number of units simultaneously by means of small shuttles positively driven. The number of divisions or weaving units per loom, dependent upon the type of fabric and the loom adapted thereto, ranges approximately from 2 to 60, and possibly higher, with double-deck looms on the narrowest articles.

The first narrow-ware looms used in the domestic industry, known as tape looms, varied as little in their construction as did the narrow-woven fabrics. As the small-wares industry expanded, innumerable designs, types, and constructions of fabrics have resulted, and the consequent demands of the small-wares manufacturers have been met by the loom makers with varied types of narrow-ware looms.

Each unit produced on a narrow-ware loom requires its own weaving space, with its individual warp drawn from a beam or from a number of spools in the frame of the loom, its set of harness and reed, and its shuttle or set of shuttles. Simple weaves may require one shuttle, but in fancy weaves with different colored filling yarns as many as six shuttles are used. Plain-woven tapes and articles with twill or sateen weave are woven on cam looms; weaves requiring more shades of harness are produced with dobby heads; while for the fancy weaves Jacquard attachments are required. The variations in the designs of narrow-ware looms are as great as, if not greater than, those of wide fly-shuttle looms.

Yarn preparation.—In the manufacture of the heavier articles, made from unbleached, undyed yarns produced in the plant, the warp yarn is spooled, warped, dressed or slashed, and then sent direct to the loom. When ply warp is used, the single yarn is spooled, doubled, and twisted before being warped. When single filling is used, the filling bobbin goes direct to the shuttle, but when ply filling is required the yarn is doubled and twisted before being quilled.

Warp yarns may be run into skeins, long chains, or spools for the bleaching and dyeing processes. Filling yarns may be bleached or dyed in the skein. Yarns are similarly prepared for mercerizing.

Yarns may be bought in the grey, single or ply, as the case may be, and in skeins, tubes, or long chains, the subsequent processes of bleaching and dyeing being done at the plant. The finest yarns, however, are generally purchased in the bleached or dyed condition, and put through the preparatory processes, as outlined above, at the plant using them. The small-wares plants on narrow wares are generally not equipped for bleaching or dyeing and the yarns are purchased ready bleached or dyed. Some plants at times buy the yarns in the grey and sublet the bleaching and dyeing to outsiders.

The narrow fabric loom.—The early looms, known as tape looms, varied little in type, but the ever-increasing demands of the trade have led to specialization in their construction, and there are now many varieties, differing in design and capacity according to the classes and types of fabrics to be made.

The narrow-ware loom is built on the multiple plan, each loom or machine containing individual weaving units, each of which has its shedding motion, take-up motion, let-off motion, pick motion, and shuttle or shuttles, where more than one color is used in the filling. The question as to the number of units per loom affording the maximum efficiency in production depends in each case upon the type of product. For tapes not over three-fourths inch in width it is assumed that two double-deck looms of 50 divisions each, producing simultaneously 100 tapes per loom, can be tended by one weaver. This, however, would be a maximum task. An objection to looms of so many units is the great loss of production arising from the necessary stoppages. The principle is the same in other multiple types of cotton-manufacturing machines, such as roving and spinning frames. The greater the capacity of the machine the larger is the product, provided the machine is kept continuously running. But it is also true that the greater the capacity of the machine the more frequent are the necessary stoppages and the heavier, therefore, the loss involved. Local conditions, however, determine practice.

In heavy looms, designed for the weaving of heavy tapes, non-elastic webbings, and narrow belts, all closely woven with coarse yarns, a sturdier design is called for, and looms for weaving such fabrics up to 2 inches in width may contain from 12 to 36 spaces each. Still heavier looms, designed for the weaving of ply-fabric belting for machinery and heavy webbings, may contain from 2 to 12 weaving units each.

In narrow-ware looms the shuttles are positively driven, and there are two distinct types of shuttles and drives in use.

For weaving the lighter and narrower fabrics, where floor space is to be economized and where the character of the product will admit of a comparatively large number of units per loom, the looms are frequently designed with the circular shuttle and drive. Figure 1, opposite page, shows the circular-shuttle drive in a standard modern loom. Motion is transmitted to the shuttles by means of a rack-and-pinion combination, the sliding rack in the lay causing fixed pinions to revolve, these in turn meshing with the racks of the shuttles and propelling the shuttles positively always in a direction opposite to that of the sliding rack. In the circular-shuttle type of loom the rack of the shuttle forms an arc of a vertical circle, the arc extending sufficiently each way from the center to insure its constant contact with a pinion, and to admit of the shuttle completely clearing the warp space of the fabric on each stroke. The axis of the body of the shuttle travels in a vertical circular arc, and an equal distance each way horizontally from the center of the weaving space of the unit.

The shuttle, in making its stroke in each direction, follows the arc and climbs upward, and in so doing tends to trespass on the adjoining space, yet through its inclined climb it clears the space without interference, as may be readily seen by referring to Figure 1. The clearance so attained is taken advantage of for building the unit spaces closer together, thus increasing the capacity of the loom per unit of length. Although this type of shuttle drive is adapted to looms for the lighter and narrower fabrics, such as ribbons and tapes, looms for weaving such fabrics are frequently equipped with the straight-shuttle drive. And while for the same number of

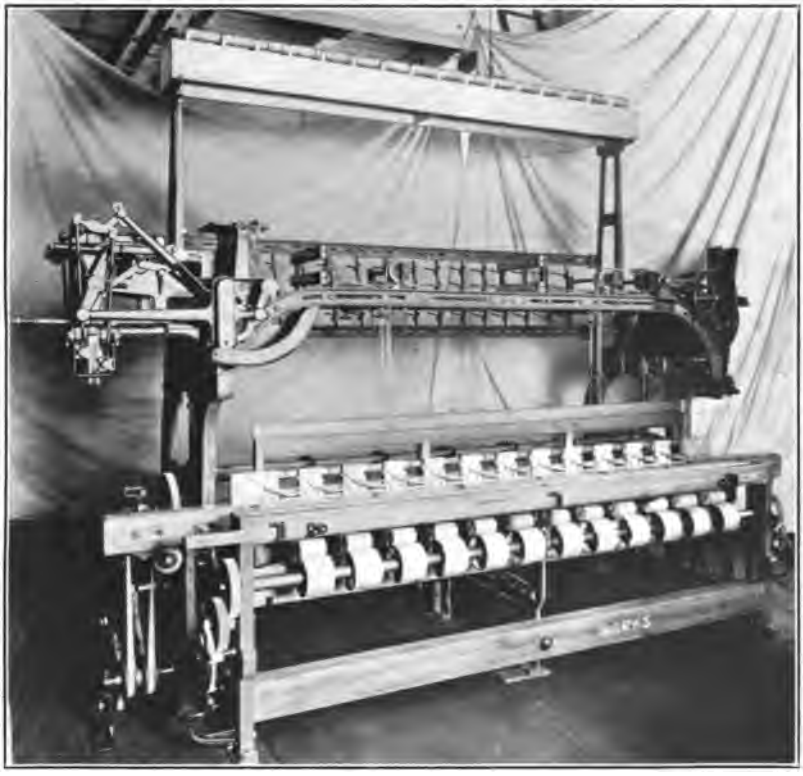

FIG. 1.—RIBBON LOOM. CIRCULAR-SHUTTLE TYPE

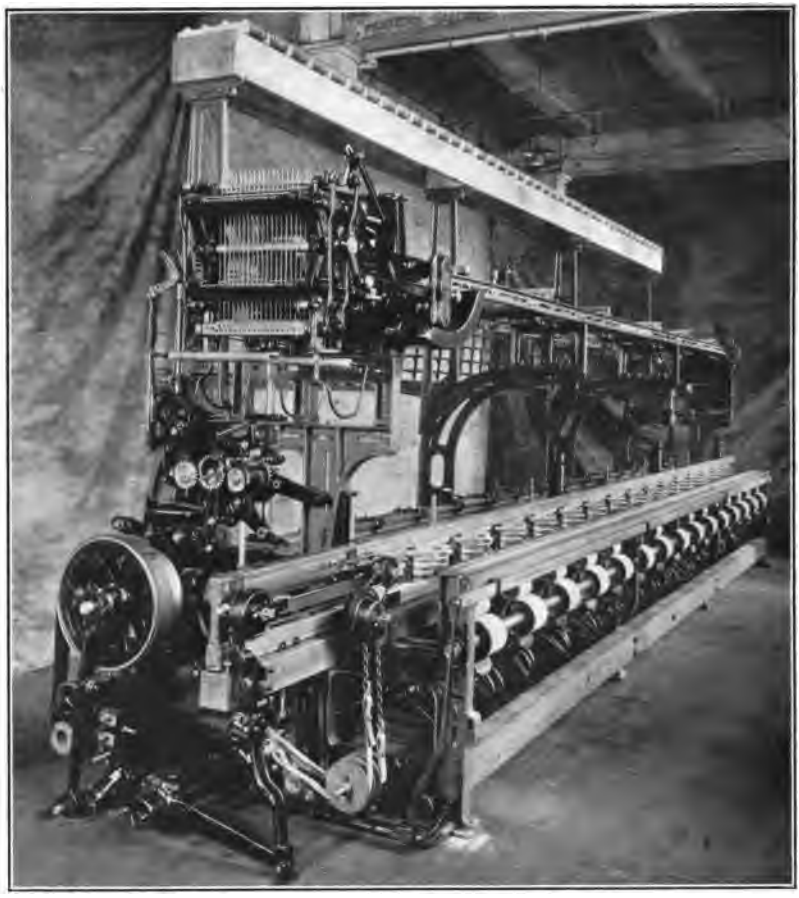

FIG. 2.—RIBBON LOOM. STRAIGHT-SHUTTLE TYPE. FOUR-BANK BATTEN AND SIDE JACQUARD

units per loom the circular shuttle type admits of economy of space, with less length of loom, the straight-shuttle drive admits of higher speed with less wear.

In looms of the straight-shuttle type the shuttle moves on each stroke only in a straight line, parallel with the lay, as may be seen in Figure 2, opposite this page, showing a modern loom equipped with four banks of shuttles. The straight-shuttle type admits of more than one shuttle to the weaving space, some looms being built with as many as six banks, each separate shuttle admitting of a separate color or a different filling yarn. Some looms of this type are built with two decks of shuttles, one above the other, admitting of two separate fabrics being woven in the one weaving space. This plan is sometimes adapted to the weaving of narrow ribbons and tapes; while the capacity of the loom is thus theoretically doubled, it is not to be expected that the product of a double-deck loom will compare in quality with that of a single-deck loom. The straight shuttle is also actuated positively through a rack-and-pinion motion.

Narrow-ware looms are also specially designed for the weaving of elastic webbings, attachments being added for the accommodation and control of the elastic rubber threads or strands woven in with the warp yarns. Garter webbings up to 1½ inches wide are usually woven on looms with 36 weaving spaces. Suspender webbings up to 2½ inches wide are generally woven on looms of 28 spaces. In the case of wider webbings, up to 6 and 8 inches wide, a still smaller number of spaces is used. In the longer looms the lays are frequently built in two equal parts.

Narrow-ware looms are also equipped with dobby heads for weaving fabrics beyond the range of the common cam motions; for weaving labels and other fabrics of extended designs, the looms are supplied with Jacquard heads, the loom being equipped in some cases with the side Jacquard; in other cases two to four Jacquards are placed overhead in the looms. Some looms are equipped with the overshot shuttle and extra warp-shedding device and with fantail or other special types of reeds. Attachments are also added for weaving fabrics with purl edges and tubular selvages, trimmings, conical ribbons, lamp wicks, and buttonholes.

While the bulk of narrow-ware products are produced on multi-space, narrow-ware looms, there is another type of narrow-ware loom which, though a complete weaving unit within itself, weaves or produces only a single end or unit of fabric. High productive efficiency is claimed for this machine on account of its operating speed, as many as 800 to 1,000 picks per minute being stated as practicable. It is also claimed that as many as 24 weaving units of this type can be coupled together on a frame with one drive and tended by one operator. So far this loom has been confined to the weaving of very narrow tapes, not exceeding three-fourths of an inch in width, and it has not been adopted on a commercial scale.

Attempts have been made to construct narrow-ware looms on the vertical plan, having the lay travel vertically, but these have not been introduced commercially.

The parts and attachments of narrow-ware looms vary in size and design according to the use intended. In looms for fine and narrow tapes and ribbons all parts must necessarily be small, and speed is a factor; but in heavy looms, adapted to the weaving of heavy mul-

tiply fabrics in the greater widths, the parts are large and the speed is comparatively low.

Bleaching.—Many narrow wares are made of grey yarns and are not subsequently bleached. The nature of the structure of most narrow wares prevents their successful handling in boiling, washing, bleaching, tentering, or calendering. For this reason, when a bleached finish is demanded by the trade, the article is usually woven of bleached yarns. There are exceptions, however, one being a ply fabric, 4 to 5 inches wide, which, woven with a conical take-up motion, is subsequently bleached and used in the manufacture of semisoft collars.

Cotton may be bleached in the raw and afterwards carded and spun, but stock so treated is affected in its drafting and spinning qualities; while this may not be of much consequence in the manufacture of coarse and medium yarns, yet, for the successful carding and spinning of the finest numbers, nothing can be allowed to reduce the spinning qualities of the material. For this reason bleached cotton narrow wares of the finest weaves are generally produced from yarns spun in the grey and subsequently bleached.

Some plants are equipped for bleaching their yarns in the coarse and medium numbers, but generally purchase their finest yarns in the bleached condition and already gassed.

Cotton yarns are usually bleached by the use of chlorine, the yarn being first boiled off in an alkali solution, then run through a solution of hypochlorite of lime and allowed to set for a certain length of time. It is then thoroughly rinsed and run through water slightly acidulated with sulphuric acid; this is called the "sour" bath. It is again thoroughly rinsed and dried. The nascent chlorine set free from the hypochlorite of lime solution is the active bleaching agent. Yarns can be bleached in skeins, hanks, tubes, cones, in the long chain, or on special spools.

Dyeing.—In the diversification of its products the small-wares trade calls in turn upon the dyeing trade. Owing to the narrow widths and constructions of most small wares very few will admit of piece dyeing and the subsequent processes of finishing necessary in preparing the articles for the trade. For this reason it is customary in the process of weaving to obtain colors by the use of dyed yarns. Many of the coarse and heavy articles are of solid colors.

Direct cotton dyes: In cotton narrow wares, such as the cheaper ribbons and other articles that are not to be washed or laundered, and in which fastness is not of prime importance, the fabrics are in many instances woven from cotton yarns dyed in the grey with direct cotton dyes. Direct cotton-dyed yarns are largely used in the weaving of elastic webbings.

The degree of fastness of dyes of this group varies with the individual dye. On account of their high solubility they have a tendency to run when washed. Many direct dyes are sensitive to acids and fade on exposure to sunlight, while some direct colors are of good fastness, except to chlorine.

In the use of direct dyes the yarn is usually boiled off and thoroughly saturated in a slightly alkaline bath to cut the wax from the fiber of the cotton. The material is then dipped in the hot-dye solution and run or worked until the dye penetration is satisfactory as to uniformity and shade, this sometimes requiring fifteen minutes. The material

is then squeezed or wrung, and is sometime subjected to a cold wash, but in the cheapest work this is not necessary.

Sulphur cotton dyes: In articles where a greater degree of fastness is required sulphur dyes are used. Dyes of this group are used almost entirely on cotton yarns for heavy deep shades, such as blues, greens, browns, and blacks. Sulphur dyes are also used in dyeing artificial silk. As a class, the sulphur dyes possess excellent fastness to washing, acids, alkalis, and, with some exceptions, their fastness to light is good. But as a class they are not fast to chlorine, and do not withstand the repeated treatments of the modern laundry. Sulphur dyes are not pure distinct compounds, and the presence of foreign substances renders them of comparatively low color value.

The sulphur dyestuff is dissolved in sulphite of soda, common salt or Glauber salt is added, and the dye is applied when the solution is at or near the boiling point. The mechanical operation is the same as for the direct dye except that the goods must be thoroughly rinsed after dyeing. Sulphur dyes give heavy, full shades, usually of a less brilliant hue than those produced by the direct and basic dyes. Sulphur dyes are not suitable for cotton yarns used in the weaving of elastic webbings on account of the injurious effect of the sulphur on the rubber strands.

Basic dyes: When shades of special brilliancy are required in the finer articles, such as the better types of ribbons, basic dyes are used. The term "basic" distinguishes these dyes from those of the acid type. They are characterized by their depth, brilliancy of shade, and purity of tone, surpassing all other classes of dyes in such qualities. They possess high tinctorial power, but as a class lack fastness, especially to light and washing, and are used on cotton yarns in dyeing, where bright shades or color tints are desired, without special requirements for fastness. Basic dyes are also used in dyeing typewriter ribbons and to some extent for cotton yarns in the weaving of elastic webbing.

Basic dyes are chemically basic and are fixed on vegetable fibers with acid mordants. The oldest of the coal-tar group, they are not now as important as formerly, owing to their replacement for cotton dyeing by direct dyes and sulphur dyes, both of which have advantages in economy of application and in many cases possess better fastness.

In applying the basic dye the yarn is first run through a solution of tannic acid or sumac. If pure tints are required the yarn is first bleached. The tannic acid is fixed in an insoluble form on the fiber with the aid of tartar emetic or a similar salt. The dyeing operation then takes place by running the yarn into a dye solution at a lower temperature than when using the direct or sulphur dyes. The yarn is worked in slowly, and the work is continued until the desired shade is obtained.

The basic dyes are more expensive than the direct or the sulphur colors—that is, in the dyed goods—partly owing to the extra labor and materials used in the dyeing process.

Vat cotton dyes: The term "vat" originated from the fact that these dyes are applied in a relatively large volume of water at about 120° F. while most other dyes are applied with a small volume of water at a higher temperature. Vat dyes, on account of their high cost, are not commonly used for solid or heavy shades, but rather for

colored stripes, and in dyed yarns for pattern effects. In the weaving of cotton labels for garments and similar articles, yarns dyed with colors of the highest obtainable degree of fastness are required. The variety of dyes for this purpose is limited. Such dyes must be fast to chlorine, washing, alkalis, and perspiration, but not necessarily fast to light. They must not bleed. For such purposes vat dyes and alizarine mordant dyes are almost exclusively used.

Turkey red is of special value and is possibly the fastest red that can be dyed on cotton. For blue the vat blues are used, such as Indanthrene Blue, G. C. D. Vat blacks and combination blacks, such as an indigo bottom with an indanthrene black top, are used for fast blacks. Aniline black is sometimes used, but is not fast to chlorine, being apt to "green-up." For purples, pinks, roses, and yellows, vat dyes are generally used.

Vat dyes, with few exceptions, do not bleed, and thus afford the highest degree of fastness. As they are insoluble in water, they must for dyeing purposes first be reduced to soluble form in an alkaline solution, with the aid of sodium hydrosulphite. The yarn is previously boiled off and rinsed, after which it is run into the solution and worked according to the mechanical process used, then taken out and squeezed or wrung; upon exposure to the air the color is formed by oxidation. The goods are then put through a dilute soap solution, which assists the oxidation, brightens the color, and removes the bath chemicals from the yarn. In dyeing with vat colors the temperature of the vat solution is usually low, but varies with individual colors.

In the domestic industry yarns have been dyed with a fast Turkey red; and alizarine, the base of the dye, has been manufactured in the United States for the past three years. Fast vat yellows, blacks, browns, purples and greens are also manufactured in this country but vat pinks and reds have not yet been produced. The vat colors above mentioned will stand the use required of labels and are preferably used in dyeing yarns for fabrics undergoing laundry treatment. There are domestic cotton shirtings that contain yarns dyed with domestic vat dyes and that withstand laundry treatment.

Mercerized cotton yarns dye as readily as those of raw cotton, and require about 25 per cent less dye material to produce the same shades.

Finishing.—When narrow-wares leave the loom, little remains to be done in the way of finishing processes except sizing, calendering, cutting up, bundling and packing for the trade. Dress or garment trimmings, lingerie ribbons, shoulder strappings, tapes, bindings, dress beltings, and similar articles are calendered when necessary and wound on tubes into rolls. Textile woven belting for machinery is usually wound into rolls without calendering. Certain types are treated by being passed through a hot solution of pine tar, asphalt, or other ingredients, for the purpose of waterproofing and increasing the wearing and pulling qualities. They are then wound into rolls for shipment to the trade. A narrow type of such woven belting is similarly treated, cut into lengths, and sold as brake linings for automobiles. Heavy tapes, like those used for reins, strappings, and heavy webbings, are shipped direct to those manufacturers who use them in their products. Tape spindle banding is shipped in bundles.

Elastic webbings, being woven with rubber elastic strands under tension, tend to pucker unevenly when doffed from the looms. They are run through hot sizing solutions, consisting mainly of thin boiled potato starch, and then dried, under slight tension, in contact with hot cylinders. This process smoothes the fabrics, destroys the uneven internal stresses, and finishes the article with a permanent set. Webbings for the retail trade are rolled, cut to lengths, labeled, and packed.

Ladder tapes are cut and trimmed and rolled to measured lengths.

PRODUCTION AND CONSUMPTION

The inclusive value of the total products of the cotton small-wares industry amounted to $6,394,164 in 1899, $8,016,486 in 1904, $13,174,111 in 1909, $11,525,033 in 1914, $40,896,835 in 1919, and $26,061,193 in 1921.

From the detailed statistics of the domestic production shown in Tables 1 and 1[a], pages 3 and 4, it will be seen that woven narrow wares, or fabrics with fast edges, not exceeding 12 inches in width, were valued at $18,215,958 in 1919; $10,478,302 in 1921; and $45,183,197[1] in 1923.

The domestic consumption of fabrics with fast edges, not exceeding 12 inches in width, is necessarily less than the domestic production, as exports, though relatively small in value, are several times larger than imports.

EXPORTS

Export statistics of fabrics with fast edges, not exceeding 12 inches in width, are not separately recorded, but, as already stated, are much larger in value than imports. Table 5, page 10, shows Canadian statistics for imports from the United States, for the fiscal years ended March 31, from 1911 to 1924, inclusive. The ratio of imports from the United States to total imports from all countries, for each year and for each article, is shown in the percentage column. It will be seen that the ratio of Canadian imports from the United States to the total Canadian imports has exceeded 50 per cent each year. From 1915 to 1919, inclusive, Canada imported all "undyed ribbons for typewriter ribbons" from the United States. In 1920 the proportion so taken was slightly over 99 per cent; in 1924 it dropped to 17.4 per cent. The United States has furnished Canada with a gradually increasing proportion of imports of "belting of cotton," amounting to over 50 per cent in 1918, and while Canada's imports of such belting were not so great in 1921 as in 1918 or 1917, yet their value was much greater in 1921 than in 1920 and 1919; in 1921 the United States furnished about 84 per cent by value, while in 1924 the proportion dropped to 64 per cent. The American share of other Canadian imports has averaged as follows: "Tapes of cotton, not over 1¼ inch in width," 73 per cent in 1919, 47 per cent in 1921, and 48 per cent in 1924; "tape, not dyed or colored," 92 per cent in 1919 and 1921 and 76 per cent in 1924; "webbing, nonelastic, for suspenders," 100 per cent in 1917, 1918, 1919, 1920, 77 per cent in

[1] See page 4 for explanation of incomparability of figures for 1923 with former years.

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1921, and 95 per cent in 1924; "tape, dyed or colored," 79 per cent in 1919, 63 per cent in 1921, and 98 per cent in 1924.

It has been stated that the production costs of American and Canadian elastic webbings are about equal, and that exports to Canada are diminishing on account of Canadian classifications by width.

The following table shows Canadian statistics for imports of narrow wares from the United States for the fiscal years ended March 31, 1919 to 1924:

TABLE 10. *Cotton narrow wares—Canadian imports from the United States, 1919–1924*

Classification	Fiscal year				
	1919	1921	1922	1923	1924
Ribbons, undyed, for typewriters	$15,963	$58,395	$14,408	$21,370	$9,400
Belting of cotton	81,921	174,717	56,816	56,122	57,962
Tape of cotton	222,155	168,780	137,815	143,654	132,354
Tape, not dyed or colored	31,350	100,744	59,110	28,354	17,955
Webbing, elastic, over 1 inch wide	298,560	526,127	354,066	333,518	291,988
Webbing, nonelastic, for suspenders	3,316	5,089	7,458	4,344	4,705
Tape, dyed or colored	16,199	20,470	18,718	20,885	23,437
Total	669,464	1,054,322	648,391	608,247	537,801

It will be seen that Canadian imports of narrow wares from the United States amounted in value to over 10 times the American imports for consumption in 1919, as shown, and that in 1921 the ratio was even greater, amounting practically to 14 to 1. It is stated that exports of fabrics with fast edges, not exceeding 12 inches in width, to other foreign countries are relatively small.

Webbings, elastic and nonelastic, are exported to South America, Japan, Australia, Cuba, Porto Rico, China, Norway, and Sweden, but not on a quantity basis.

Some garter webs containing artificial silk are exported to Belgium, France, Italy, England, Switzerland, and the Netherlands, the artificial silk used in these articles being imported from those countries with drawback privileges.

Domestic manufacturers are able to obtain the imported artificial silk at landed prices equal to those quoted for the domestic material. One of the largest domestic firms engaged in the manufacture of the finer grades of narrow fabrics exports some notions to Canada, some elastics to South America, and a line of "middie bands" to Australia, nothing to China or Japan, very little to Europe, and only a few articles in small lots to certain large stores in England. Prior to the World War, another very large and long established company, manufacturing diversified narrow wares, usually exported about 10 per cent of its products, but since the war has been exporting only about 5 per cent, mostly to South America, through various exporting agencies. This firm exports to China, Japan, Egypt, and Canada, but not to Germany.

IMPORTS

Import statistics of fabrics with fast edges not exceeding 12 inches in width were not reported separately prior to July 1, 1918. Imports for consumption are shown in Table 11, from that date to December 31, 1924, inclusive. On the valuation basis, there was a gradual increase up to the enactment of the present law, September 21, 1922. In the latter part of 1922 there was a decided increase. By 1923 the increase had become very marked, imports amounting in value to practically five times the annual average up to September 21, 1922. Preliminary figures for 1924 show a decided decrease compared with 1923 values. Imports consist largely of tapes, typewriter ribbons with fast edges, bandings, skirt beltings, ribbon bands, shoe gorings, elastics, and bindings.

TABLE 11.—*Cotton fabricsw ith fast edges, not exceeding 12 inches in width*[1]—*Imports for consumption—Revenue, 1918–1924*

Calendar year	Rate of duty	Quantity	Value	Duty collected	Unit value	Actual and computed ad valorem rate
		Yards				*Per cent*
1918[2]	25 per cent	951,179	$19,100	$4,775	$.0201	25.00
1919	do	2,140,542	66,613	16,653	.0311	25.00
1920	do	5,375,635	69,328	17,332	.0129	25.00
1921[3][4]	do	4,367,432	72,572	18,553	.0166	25.56
1922[3][5][6]	do	7,465,851	76,684,	19,767	.0103	25.78
Annual average[7]	do	4,291,890	64,333	16,296	.0150	25.33
		Pounds				
1922[8][9]	35 per cent	51,810	108,352	37,923	2.09	35.00
1923[10]	do	283,910	315,173	110,310	1.11	35.00
1924[11]	do	138,164	173,074	60,576	1.25	35.00

[1] Not separately reported until July 1, 1918.
[2] July 1, 1918, to Dec. 31, 1918, inclusive.
[3] 25 per cent plus 7 cents per pound for cotton having a staple of 1⅛ inches, or more in length.
[4] Includes 3,041,732 yards, valued at $57,520, dutiable at 25 per cent ad valorem, and 1,325,700 yards (5,860 pounds), valued at $15,052, dutiable at 25 per cent ad valorem and 7 cents a pound.
[5] Jan. 1, to Sept. 21, inclusive.
[6] Includes 3,859,607 yards, valued at $49,216, dutiable at 25 per cent ad valorem, and 3,606,244 yards (8,511 pounds), valued at $27,468, dutiable at 25 per cent and 7 cents a pound.
[7] For 1,725 days, equivalent to 4.73 years.
[8] Sept. 22, to Dec. 31, inclusive.
[9] Classification of act of 1922: Fabrics with fast edges not exceeding 12 inches in width, and articles made therefrom. Statistics of imports include 3,952 pounds of bandings and bindings, valued at $7,376, duties collected, $2,582; 29,906 pounds of belts and beltings, valued at $51,292, duties collected, $17,952.
[10] Statistics of imports include 10,301 pounds of bandings and bindings, valued at $22,178, duties collected, $7,762; 139,635 pounds of belts, and beltings valued at $111,227, duties collected, $38,929.
[11] Preliminary figures.

TABLE 12.—*Cotton bandings, beltings, bindings, bone casings, tubing, cords, tassels, garters, tire fabrics, tapes, suspenders, braces, and fabrics with fast edges not exceeding 12 inches in width*[1]—*Imports for consumption—Revenue, 1891–1924*

Year	Rate of duty	Value	Duty collected	Actual and computed ad valorem rate
Fiscal:				*Per cent*
1891 [2]	40 per cent	$211,175	$84,470	40.00
1892	do	323,908	129,563	40.00
1893	do	421,354	168,542	40.00
1894	do	302,166	120,866	40.00
1895 [3]	do	88,481	35,392	40.00
1895 [4]	45 per cent	400,734	180,330	45.00
1896	do	438,456	197,305	45.00
1897	do	404,614	182,076	45.00
1898	do	391,423	176,140	45.00
1899	do	356,182	160,282	45.00
1900	do	466,672	210,003	45.00
1901	do	566,164	254,774	45.00
1902	do	545,607	245,523	45.00
1903	do	581,743	261,784	45.00
1904	do	396,209	178,294	45.00
1905	do	435,301	195,886	45.00
1906	do	485,236	218,356	45.00
1907	do	635,002	285,751	45.00
1908	do	495,061	222,776	45.00
1909	do	494,391	222,476	45.00
1910	do	236,342	106,354	45.00
1911	do	141,903	63,857	45.00
1912	do	140,654	63,294	45.00
1913	do	132,037	59,417	45.00
1914 [5]	do	25,744	11,585	45.00
1914 [6]	25 per cent	506,449	126,612	25.00
1915	do	366,542	91,635	25.00
1916	do	278,900	69,725	25.00
1917	do	206,532	51,633	25.00
1918	do	565,944	141,486	25.00
Calendar:				
1918 [7]	do	475,665	118,916	25.00
1919	do	377,093	94,273	25.00
1920	do	409,072	102,268	25.00
1921	do [8]	[9] 364,535	93,204	25.57
1922 [10 11]	do [8]	306,401	77,969	25.45
Annual average [12]		405,428	156,338	38.56
1922 [13 14]	35 per cent	121,154	42,403	35.00
1923 [14]	do	398,992	139,646	35.00
1924 [15]	do	261,462	91,512	35.00

[1] Mainly "Fabrics with fast edges, not exceeding 12 inches in width," this term covers tapes, bandings, beltings, bindings etc. The figures shown also include, without separate record, the following: "And manufactures thereof," under the act of 1922; gimps, galloons, and goring under the acts of 1890 and 1894; garters, suspenders, braces, cords, tassels, cords and tassels, and tire fabrics, prior to July 1, 1918; and tubings (including bone casings) prior to the act of 1922.

[2] For 1891 there were "cords, braids, gimps," etc., not included, to the value of $184,033; duty, $64,412 rate, 35 per cent, coming in under the act of 1883.

[3] July 1 to Aug. 27, 1894, inclusive.

[4] Aug. 28, 1894, to June 30, 1895, inclusive.

[5] July 1 to Oct. 3, 1913, inclusive.

[6] Oct. 4, 1913, to June 30, 1914, inclusive.

[7] July 1 to Dec. 31, 1918, inclusive.

[8] Plus 7 cents a pound if containing cotton having staple of 1⅛ inches or more under emergency tariff act of May 27, 1921.

[9] Includes imports valued at $309,638, dutiable at 25 per cent ad valorem and 29,684 pounds, valued at $54,896, dutiable at 25 per cent ad valorem and 7 cents a pound.

[10] Jan. 1 to Sept. 21, 1922, inclusive.

[11] Includes imports valued at $251,985, dutiable at 25 per cent ad valorem, and 19,557 pounds, valued at $54,416, dutiable at 25 per cent ad valorem and 7 cents per pound.

[12] For 11,673 days, equivalent to 32 years.

[13] Sept. 22 to Dec. 31, inclusive.

[14] Classifications under the act of 1922; fabrics with fast edges not exceeding 12 inches in width, and articles made therefrom; tubings; cords, tassels, and cords and tassels; garters, suspenders, and braces.

[15] Preliminary figures.

COMPETITIVE CONDITIONS

Detailed statistics are not available, but it is stated in the trade that competitive imports are mainly from Germany, with occasional shipments from England, France, Switzerland, and other countries. Germany has long been the chief source of imports of woven and braided narrow wares, the industry being well established and highly developed in Barmen, Crefeld, and Elberfeld. While both German and American manufacturers import their finest cotton yarns from England, the Germans have the advantage in the import duties which domestic manufacturers are compelled to pay on this raw material. German manufacturers have the further advantage of cheaper dyes, and where absolutely fast and satisfactory dyes of the highest quality are required they enjoy a decided advantage in competing for orders. These phases of competitive conditions are discussed in greater detail in Section IX—Labels for garments and other articles.

A special narrow-woven fabric, from 7 to 8 inches in width, known as baby binding, is imported from Italy for use among the population of Italian extraction. It is said that no comparable article is produced in the domestic industry. Imports of typewriter ribbons with fast edges are due largely to the fact that domestic typewriter ribbons are made from strips cut from wide-woven fabrics, and consequently without fast edges.

The technical skill and knowledge of the domestic manufacturer are fully equal to that of the foreign producer, but in the matter of labor and material costs the foreign manufacturer has the advantage. In order to reduce costs, the domestic manufacturer strives for quantity production, but the foreign manufacturer, with the advantage of cheaper and more abundant labor, is able to compete successfully for small orders. In the line of elastic fabrics and webbings the domestic industry is firmly established, competitive imports consisting mostly of shoe gorings from Germany and small elastic webs of a staple, plain type from England, produced and handled on a quantity basis.

TARIFF HISTORY

The inclusive term "Fabrics with fast edges not exceeding 12 inches in width" (embracing articles made of cotton or of which cotton is the component material of chief value, or of cotton and india rubber, and not embroidered by hand or machinery) was first employed in the act of 1913, which imposed a duty of 25 per cent ad valorem on imports. In the act of 1922, "Fabrics with fast edges not exceeding 12 inches in width, and articles made therefrom," is the inclusive term used, and imports of such articles, composed wholly or in chief value of cotton, or of cotton and india rubber, are subject to a duty of 35 per cent ad valorem.

FOREIGN PRODUCTION

Statistics of production in foreign countries are not available.

COURT AND TREASURY DECISIONS

Under the acts of 1883 and 1890 elastic webbing composed of cotton and india rubber was held to be dutiable as webbing. (G. A. 133, T. D. 10483 of 1890; G. A. 1223, T. D. 12539 of 1892; G. A. 2150, T. D. 14151 of 1893; G. A. 2449, T. D. 14727 of 1894; G. A. 3812, T. D. 17937 of 1897.)

Under the act of 1894 cotton beltings which were not specifically provided for were held to be dutiable as manufactures of cotton at 35 per cent ad valorem. (G. A. 3944, T. D. 18234 of 1897.)

Under the act of 1897 so called bridle tapes of cotton, braided on a braiding machine, about three-sixteenths of an inch wide, and intended to be used as a part of piano-forte actions, were held to be dutiable as cotton tapes under paragraph 320 and not as cotton braids. (G. A. 5650, T. D. 25216 of 1904.)

Tapes and ladder tapes are not the same thing, and an importation of ladder tapes, not shown to be within the commercial designation of tapes, was held to be dutiable as a manufacture of cotton under the act of 1909. (*United States* v. *Walter*, 3 Ct. Cust. Appeals, 94 of 1913.)

Under the act of 1913 the following decisions were rendered: Cotton bandages in the piece in their entirety, not commercially suitable for any other use than to be cut into bandages, were held to be dutiable as bandings under paragraph 262, and not as cotton cloth under paragraph 252. (G. A. 8237, T. D. 37933 of 1919; T. D. 35952 of 1915.)

Narrow-woven articles less than 1 inch in width with a finished pattern or design along one edge, cotton chief value, were held to be dutiable as bindings. (Abstract 37682 of 1915; *Massce* v. *United States*, 3 Ct. Cust. Appeals, 470 of 1912.)

Strips of cotton cloth approximately 4 inches wide and from 5 to 6 yards in length were held to be dutiable as bandings. (T. D. 34284 of 1914.)

Elastic webbing in chief value of cotton was held to be dutiable as cloth fabric with fast edges not exceeding 12 inches in width. (Abstract of 37644 of 1915.)

The *eo nomine* provision for belts in paragraph 262 was held to be more specific than the provision for wearing apparel in paragraph 256, and belts composed of silk and cotton were held to be dutiable under paragraph 262. (Abstract 46277 of 1923.)

Cotton tapes not being especially provided for were held to be dutiable as fabrics with fast edges not exceeding 12 inches in width under paragraph 263, rather than under paragraph 358. (Abstract 44681 of 1922.)

Woven cotton fabrics in the piece, not exceeding 12 inches in width, with fast edges and with printed designs at regular intervals, were held to be more specifically provided for in paragraph 262 as fabrics with fast edges not exceeding 12 inches in width than as printed cotton cloth in paragraph 252. (G. A. 8327, T. D. 38316 of 1920.)

Coarse cotton fabric from 7 to 9 inches in width, having looped edges, shown to be used in connection with lace or other trimmings for making bedspreads, in such fashion that the lace or other trimming was attached to the looped edge of the fabric, was held to be dutiable as "Fabrics with fast edges not exceeding 12 inches in width" under paragraph 262, rather than as "trimmings" under paragraph 358. (Abstract 42501, of 1918.)

II. TUBINGS

General Information

DESCRIPTION AND USES

Tubings of cotton, covered by paragraph 913 of the act of 1922, include mostly small wares produced on narrow-ware looms. Tubings are woven with two distinct warps, upper and lower, the weave being complete on four picks, producing a double fabric connected at the edges. This is the principle used in the weaving of seamless bags and pillow tubings on wide looms. Tubings serve as bone casings for enclosing corset steels, for the incasing of the stems of artificial flowers and for other purposes. Some are produced on braiding machines and used as "sleevings" for insulating purposes in the electrical industry.

Various types of lamp and stove wickings are also tubular woven on narrow-ware looms, and some are also tubular braided, but such wickings are specifically mentioned in paragraph 913 and provided for at a special rate of duty. Certain types of fire hose, also tubular woven, are provided for under paragraph 1007 as "Hose suitable for conducting liquids or gases, composed wholly or in chief value of vegetable fiber." Pillow tubings and seamless bag fabric are dutiable as countable cotton cloth.

DOMESTIC PRODUCTION

Tubings constitute a small and relatively unimportant portion of the domestic production of cotton small wares, and are not separately recorded in the census statistics. The textile directories do not show any plant engaged exclusively in the manufacture of tubings, and there is no record of exports in published official statistics.

IMPORTS

Under previous tariff acts, imports of tubings have not been recorded separately from other cotton small wares, but are reported to have been negligible. In the statistical classification of imports effective September 22, 1922, a separate import number was assigned to tubings of cotton, but up to December 31, 1922, inclusive, there were no imports classed under this heading. In the calendar year 1923 imports of tubings amounted to 237 pounds, valued at $234; duty collected $82. Preliminary figures for 1924 show imports of 208 pounds, valued at $396, duty collected $139.

Tubings, under consideration, constitute a very small portion of the output of the domestic small-wares industry, and at present meet with little competition from abroad.

TARIFF HISTORY

Tubings were not mentioned in the acts of 1883, 1890, or 1894. The act of 1897 provided for tubing, also bone casings "made of cotton or other vegetable fiber," at the rate of 45 per cent ad valorem. The act of 1909 provided for tubings and bone casings, "made of

cotton or other vegetable fiber, and india rubber, or of which cotton or other vegetable fiber is the component material of chief value," at the rate of 45 per cent ad valorem. Tubings were not specifically mentioned in the act of 1913, but bone casings, "made of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value, or of cotton or other vegetable fiber and india rubber," were provided for at 25 per cent ad valorem. The act of 1922 provides for tubings, "composed wholly or in chief value of cotton or of cotton and india rubber, and not specially provided for," at 35 per cent ad valorem, but omits specific mention of bone casings, on the ground that they are a variety of tubing. Tubings are specially mentioned in this act, since, being tubular-woven and therefore without selvages, they might be held as not included under "fabrics with fast edges not exceeding 12 inches in width."

Court and Treasury Decisions

Cotton bone casings, not commercially known as galloons, were held to be dutiable as manufactures of cotton under paragraph 264 rather than as galloons under paragraph 263. (G. A. 3026, T. D. 16002 of 1895.)

III. GARTERS, SUSPENDERS, AND BRACES

General Information

DESCRIPTION AND USES

A garter may be defined as a band worn around the leg to hold the stocking in place; loosely, any stocking supporter. Garters worn by men are generally made to encircle the leg, the ends fastening together with clasps, and provided with catches to grip the sock. Garters worn by women and children may be of the type that encircles the leg, or they may be made as hose supporters. Garters may also be worn as arm bands.

A suspender is one of a pair of straps passing over the shoulders to support the trousers or one of a pair of braces.

Garters and suspenders generally have elastic webbing as their basic material; in some types nonelastic webbing is substituted, in others there is a combination of the two.

The English use the term "braces" instead of suspenders, and the most popular suspenders imported from France are labelled "bretelles." In the domestic industry the term "braces" is sometimes synonymous with the word "suspenders," but is more often confined to body braces, made of elastic or nonelastic webbings, worn to correct round shoulders or other physical defects.

THE DOMESTIC INDUSTRY

History.—The garter and suspender industry is the largest consumer of the output of the domestic elastic-webbing industry, and the two industries are so interdependent that their history is practically one.

The manufacture of elastic webbing dates back to about 1840 in Europe, but did not begin in this country until about 1860. The earliest uses of elastic webbings were for the manufacture of shoe gorings, garters, and suspenders, special types being produced for each purpose. Garters and suspenders made of elastic webbings supplied a long-felt want, and rapidly superseded the makeshifts previously employed. The manufacture of these articles has steadily developed into an industry with an annual output of millions of dollars in value.

Geographical distribution.—Details as to the development of the manufacture of "suspenders, garters, and elastic woven goods" in the United States and in the various States in the census years 1909, 1914, 1919, and 1921 are recorded in Table 13, below. Prior to 1909 elastic woven goods were included in part under men's furnishings, in part under millinery and lace goods, and in part under rubber and elastic goods (now classified as "rubber tires, tubes, and rubber goods not elsewhere specified"). In addition to the products covered by the table, suspenders, garters, and elastic woven goods to the value of $694,035 in 1914 and $2,017,142 in 1919 were reported under other classifications.

Of the establishments recorded by the census as engaged in the manufacture of suspenders, garters, and elastic woven goods in 1921, 55 were in New York; 27 in Massachusetts; 17 in Connecticut. In

1921 the total number of establishments was 170, as compared with 251 in 1909. Statistics for 1923 show 99 establishments producing suspenders, garters, and elastic woven goods, from purchased webbing, as follows: New York, 44; Illinois, 12; Massachusetts, 11; Connecticut, 6; Ohio, Pennsylvania, and Wisconsin, 4 each; Minnesota and Missouri, 3 each; the remaining 8 were in Colorado, Iowa, Louisiana, Michigan, New Jersey, and North Carolina.

TABLE 13.—*Suspenders, garters, and elastic-woven goods—Geographical distribution, census years 1909–1921*

[Source: Federal Census]

State	Year	Establishments	Wage-earners, average number	Primary horsepower	Expressed in thousands				
					Capital	Wages	Cost of materials [1]	Value of products	Value added by manufacture
United States	1909	251	10,141	4,899	$15,208	$4,273	$16,912	$28,350	$11,438
	1914	216	9,646	7,524	16,344	4,276	15,191	24,433	9,242
	1919	[2] 196	10,857	9,028	39,677	9,270	36,369	60,775	24,406
	1921	170	9,493	[3]	[3]	8,789	27,233	44,935	17,702
New York	1914	87	1,149	156	1,624	522	3,025	4,461	1,435
	1919	80	1,238	253	3,889	1,176	7,255	10,618	3,363
	1921 [4]	55							
Massachusetts	1914	30	2,947	1,650	5,060	1,411	3,581	6,323	2,743
	1919	29	2,965	1,956	10,155	2,470	8,351	14,972	6,621
	1921 [4]	27							
Connecticut	1914	[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]
	1919	15	3,426	4,197	15,788	3,332	10,262	16,966	6,704
	1921 [4]	17							
Illinois	1914	14	628	135	808	237	1,220	2,077	857
	1919	14	[5]	[5]	[5]	[5]	[5]	[5]	[5]
	1921 [4]	15							
Rhode Island	1914	6	495	1,528	1,068	302	734	1,222	488
	1919	10	892	1,722	2,428	754	2,569	4,261	1,692
	1921 [4]	14							
Pennsylvania	1914	22	696	149	788	209	1,406	2,171	765
	1919	14	481	139	1,462	336	1,822	3,182	1,360
	1921 [4]	11							
New Jersey	1914	6	211	219	901	109	326	552	226
	1919	7	255	279	1,191	240	663	1,356	693
	1921 [4]	7							
Ohio	1914	11	274	153	449	104	586	939	353
	1919	7	261	153	787	162	772	1,414	642
	1921 [4]	6							
Minnesota	1914	[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]
	1919	3	30	8	144	21	155	224	69
	1921 [4]	3							
Wisconsin	1914	[5]	[5]	[5]	[5]	[5]	[5]	[5]	[5]
	1919	5	11	5	51	8	88	124	36
	1921 [4]	4							
All other	1914	[5]			3,534	1,382	4,313	6,688	2,375
	1919	12	1,298	316	3,782	771	4,432	7,658	3,226
	1921 [4]	[4] 11	[4]	[4]	[4]	[4]	[4]	[4]	[4]

[1] Includes principal materials, fuel, and rent of power.
[2] Includes 21 establishments with products less than $5,000 each.
[3] Figures not available.
[4] Figures for subdivision by States not available for the years 1921 and 1923.
[5] Included in "All other."

Organization and equipment.—Owing to changes in classification, the figures for the census years shown in the table below are not directly comparable because of the fact that the 1923 data are limited to plants that purchased the webbing from which they manufactured suspenders, garters, and other elastic woven goods. While in earlier years it was the usual practice for manufacturers to buy their materials, some plants produced their own fabrics, a few turning out a full line of elastic and nonelastic webbings, as well as the braided cords used in garters and suspenders of certain types.

The equipment of plants engaged in this line of manufacture is largely confined to machinery for cutting, stamping, and sewing. Buttonholes in the webbings are usually made in the weaving process.

TABLE 14.—*Suspenders, garters, and elastic-woven goods—Organization and equipment, census years 1909–1923*

[Source: Federal Census]

	1909	1914	1919 [1]	1921 [1]	1923 [2]
Number of establishments	251	218	175	170	99
Persons engaged	11,545	11,038	12,466	10,818	----------
Proprietors and firm members	251	199	129	127	----------
Salaried employees	1,153	1,193	1,430	1,198	----------
Wage earners, average number	10,141	9,646	10,857	9,493	3,457
Primary horsepower	4,899	7,524	(3)	(3)	824
Capital	$15,207,880	$16,343,686	$39,676,879	(3)	----------
Salaries and wages	5,818,977	5,931,600	12,861,000	$11,436,000	----------
Salaries	1,545,675	1,655,474	3,591,000	2,647,000	----------
Wages	4,273,302	4,276,126	9,270,000	8,789,000	$2,871,526
Paid for contract work	(3)	236,543	470,000	569,000	----------
Materials, fuel, rent of power	(3)	15,191,194	36,369,000	27,233,000	13,934,072
Value of products	(3)	24,432,753	60,775,000	44,935,000	24,297,342
Value added by manufacture	(3)	9,241,559	24,406,000	17,702,000	10,363,270

[1] Establishments with products valued at less than $5,000 are not included in the figures for 1921. There were 12 of this class, reporting 5 wage earners, with products valued at $31,000. For 1919, however, figures for 21 establishments of this class, reporting 21 wage earners, and products valued at $56,000; and for 1914, 30 such establishments, with 15 wage earners, and products to the value of $62,000, are included in all items with the exception of "Number of establishments."

[2] Figures are not comparable with those for previous census years. For explanation of apparent decrease see text above.

[3] Figures are not available.

Materials used.—The principal material used in the manufacture of garters, suspenders, and braces is elastic webbing, but nonelastic webbing, elastic and nonelastic braided cords, ribbons, metal buckles, catches, fasteners, and cloth, as well as leather, are also employed.

The webbings are woven on narrow-ware looms, and are mainly of cotton yarns, which may be in whole or in part grey, bleached, mercerized, or dyed. Braided fabrics are also produced from similar yarns. In the elastic woven webbings, elastic threads of india rubber are woven in with the warp, and are used in the cores of the elastic braided cords. With rare exceptions, the materials used are of domestic manufacture. In addition to these articles covered by paragraph 913, the industry utilizes similar articles, but of materials provided for in other textile schedules of the present law.

The domestic manufacture of garters, suspenders, and braces is so dependent upon that of the elastic webbings entering into them that an outline of the development of the elastic webbing industry may be of interest at this point.

The weaving of rubber elastic threads with other materials began about 1840. The American industry was started about 1860, although for a number of years previously England, Germany, and France in a small way had found in this country a market for their products, particularly in cords, braids, and shoegorings. A few looms were brought over from England and installed at Easthampton, Mass., and the manufacture of shoegoring was begun.

For some time the rubber thread required was imported from England. The business grew rapidly, and factories were installed in Boston, Lowell, and Brockton, Mass.; in Bridgeport, Conn.; and in Camden, N. J. A labor dispute about 1890 ultimately caused the shoe trade to abandon the use of goring web and most of the looms making such webbing were diverted to the manufacture of other types of elastic webbings.

Attempts have been made to weave elastic webbings on wide looms, the cloth being divided at intervals, according to the widths required,

by gaps in the warp, binder threads being woven in at each edge. The strips were cut apart by knives properly placed in the loom. While this method was much more economical than weaving individual webs in gang or narrow-ware looms, the product was unsatisfactory, owing to the lack of finish and the imperfect edges.

Attempts were also made to calender an elastic substance between two separate, finely woven cloths, afterwards cutting the product into narrow strips of the desired widths. This method was simple, and though admitting of the use of a great variety in outer cloths, some of which were finished by embossing and printing, it was also discarded by the trade. The webbing business ultimately settled down to the weaving of narrow-ware elastic goods, plain and fancy, on narrow-ware or gang looms, and the business has steadily grown along those lines. Some narrow-ware looms for the weaving of webbings used in suspenders and braces and in certain types of garters are equipped with attachments for producing the necessary buttonholes in the process of weaving.

In the weaving of elastic webbings the proper manipulation of the rubber warp threads and the yarns calls for skill and extensive experience. Atmospheric conditions also affect the product, especially in weaving, widening the phases of the problems. A low humidity being necessary in weaving elastic webbings, it is sometimes necessary to use artificial heat in warm weather in order to lower the relative humidity in the weaving rooms.

In making some braided elastic webbings, intended for arm bands and garters of certain types, the elastic rubber strands are first put through a braiding machine; this produces an elastic "soutache" braid, the rubber being completely covered with the braiding threads. This elastic "soutache" braid is woven into the finished fabric in the final process.

During the World War special requirements for certain kinds of elastic webbings made it necessary that the elastic rubber strands be completely covered with yarn or thread before being woven into the webbing. The object of this was to increase the life of the elastic threads in service by protecting them against the effects of perspiration and humidity. It was said that the life of the fabric was practically doubled by this expedient. For the same reasons surgical bandage elastic webs, which are required to be soft and in which the texture varies by reason of the different widths called for by the design, are made with rubber strands previously covered with braiding.

The yarns used vary in fineness and ply, and the webs and cords, being subject to changing fashion, vary greatly in design, size, and texture. An important part of all elastic webs consists of the elastic rubber threads used in the warp, as is the case also in the braiding of elastic cords. The yarns used in domestic elastic fabrics are of domestic manufacture, being within the range readily furnished by domestic spinners. The rubber elastic threads are also purchased in the domestic market.

The preliminary processes preparatory to weaving are similar to those employed in the production of other narrow wares, the rubber strands calling for special treatment and handling.

In weaving elastic webbings the simplest method is that used in making garter webs and similar fabrics used in the household. These are generally made on plain cam ribbon looms, some types of which

are capable of producing as many as 56 pieces or strips at one time. The more common webbings are loom webs, lisles, and cables, all of which are of single-cloth construction. The filling threads constitute the most conspicuous features, and the fabrics range in width from one-fourth inch to 2 inches. Two cotton warps are usually employed: One of these, the binder, weaves two up and two down, while the other, called the gut or filler warp, weaves with the rubber warp, one up and one down. The selvage is formed by the filling pick passing around the stationary steel wire fastened in the loom at the edge of the warp. The end of this wire, over which the pick of filling passes, tapers to a point and, being stationary, the picks slide from it as the web is carried forward in the process of weaving. Looms of both the straight shuttle and the circular shuttle type are used.

Lisle webs are also plain, but are made with high-grade, combed, gassed yarns for the filling, and are woven with four binder warp threads between the strands of rubber instead of two as in the loom web. In the weaving, the filling commonly used consists of a 26s two-ply combed gassed yarn.

All bleaching and dyeing must necessarily be done in the yarns before weaving, as the webbing can not be subjected to any boiling processes. As explained in the chapter on small wares, sulphur dyes are not suitable for yarns to be used in elastic webs on account of the effect of the sulphur on the rubber.

The cable web is the most popular type for use in men's garters. It shows the prominence of the two dent ribs and differs in appearance from the plain web.

The French web, or railroad weave, an intermediate grade between the loom and the lisle web, is also used.

The principal use of elastic webbings is for suspenders, garters, and braces, which articles call also for nonelastic webbings. Innumerable other uses are found for what are commonly known in the trade as "elastics."

Elastic webbings, after leaving the loom, are slashed with sizing materials containing starch, and calendered over steam-heated cylinders, under sufficient tension to finish the fabric with a smooth surface acceptable to the trade. The webbings in this condition go to the manufacturers of garters, suspenders, and braces, who depend entirely upon the domestic supply of these materials.

Methods of production.—The manufacture of garters, suspenders, and braces from elastic and nonelastic webbings consists practically of cutting up, stamping, sewing, stitching and binding, and the affixing of buckles, clasps, fasteners, and catches, the articles being then assorted and packed for shipment. Shirred ribbon garter stock is also prepared by enclosing braided elastic fabrics, under tension, between fancy shirred ribbons, in the process of stitching on sewing machines. Fancy garters and supporters are made from such stock in many varieties and styles, the subsequent process consisting mainly of cutting and stitching, and the addition of decorative articles. Garter materials are also sold in the retail trade, and many articles are made in the homes of the ultimate consumers.

Production and consumption.—The production of suspenders, garters, and elastic-woven goods was valued in 1923 at $24,297,342; in 1921, at $44,935,467; in 1919, at $60,774,652; and in 1914, at $24,432,753. The value of suspenders and garters is not recorded

separately from other elastic woven goods, and there are no statistics as to quantity.

The import classification groups "garters, suspenders, and braces," while export figures are for "suspenders and garters," and production statistics for "suspenders, garters, and elastic-woven goods." Owing to these variations in classification and to figures not being separately shown for any one article, no strict comparison of domestic production, imports for consumption, and exports can be made. Figures for the last three census years are as follows:

	1919	1921	1923
Domestic production of "suspenders, garters, and elastic-woven goods"	$60,774,652	$44,935,467	[1] $24,297,342
Imports for consumption of "garters, suspenders, and braces"	22,364	136,776	62,075
Exports of "suspenders and garters"	2,551,858	751,676	970,547

[1] Not comparable with 1921. See p. 34 for explanation of apparent decrease in figures.

It will be evident from the above table that domestic consumption practically depends upon domestic production.

EXPORTS

The value of exports of suspenders and garters for the years 1918 to 1923 is shown in the following table:

TABLE 15.—*Suspenders and garters—Exports 1918–1923*

	1918	1919	1920	1921	1922	1923
Total countries	69	85	83	73	67	87
Total exports, value	$1,185,985	$2,551,858	$4,143,487	$751,676	$720,690	$970,547
Canada	76,000	139,000	157,000	136,000	74,944	70,616
Mexico	43,000	81,000	178,000	98,000	45,830	95,334
Cuba	119,000	244,000	418,000	76,000	115,914	156,049
Argentina	168,000	383,000	772,000	69,000	204,793	247,134
Australia	103,000	97,000	162,000	45,000	16,883	22,774
Japan	27,000	44,000	41,000	33,000	25,996	15,947
England	55,000	121,000	193,000	31,000	9,131	11,864
Denmark	22,000	286,000	65,000	24,000	8,817	8,298
Brazil	66,000	88,000	384,000	19,000	2,302	5,486
New Zealand	17,000	45,000	109,000	14,000	35,382	83,128
Germany		147			500	
All other countries	489,985	1,023,711	1,664,487	206,676	180,198	253,917

It may be noted that while suspenders and garters were exported in appreciable quantities to many countries during the five years shown, practically none went to Germany.

Canadian statistics of imports from the United States of "braces, suspenders, and finished parts of"; "webbing, elastic, over 1 inch wide"; and "webbing, nonelastic, for suspenders," for the fiscal years ended March 31, 1919 to 1924, inclusive, will be found in Table 5, page 10.

IMPORTS

Garters, suspenders, and braces were not separately recorded in imports for consumption prior to July 1, 1918. Table 16 shows imports from that date to December 31, 1924, inclusive. Imports of suspenders have for many years consisted almost entirely of a well-known brand, made in Paris. These are well made and practically all hand-sewed, tending to increase the life of the article in

use. The name of the maker appears on each pair. They are nonelastic, but have elastic backs and fabric tabs or thumb pieces on each buckle.

TABLE 16.—*Garters, suspenders, and braces, of cotton*[1]*—Imports for consumption—Revenue, 1918–1924*

Calendar year	Rate of duty	Quantity	Value	Duty collected	Unit value	Actual and computed ad valorem rate
		Number				*Per cent*
1918 [2]	25 per cent ad valorem	102,649	$15,076	$3,769	$0.1469	25.00
1919	do	66,580	22,364	5,591	.3359	25.00
1920	do	108,159	31,945	7,986	.2954	25.00
1921	do. [3]	[5] 422,530	[5] 136,776	34,423	.3237	25.17
1922 [4]	do. [3]	[6] 279,104	[6] 103,901	26,109	.3723	25.13
1922 [7]	35 per cent ad valorem	24,318	8,639	3,023	.3553	35.00
1923	do	251,023	62,075	21,726	.2472	35.00
1924 [8]	do	245,237	61,649	21,577	.2514	35.00

[1] Not recorded separately prior to July 1, 1918.
[2] From July 1 to Dec. 31, 1918, inclusive.
[3] Plus 7 cents a pound on those containing cotton having a staple of 1⅛ inches or more, under emergency tariff act of May 27, 1921.
[4] From Jan. 1 to Sept. 21, 1922, inclusive.
[5] Includes 399,330 (weight not stated), valued at $127,800, dutiable at 25 per cent ad valorem, and 23,200 (weighing 3,278 pounds), valued at $8,976, dutiable at 25 per cent ad valorem and 7 cents a pound.
[6] Includes 264,222 (weight not stated), valued at $98,492, dutiable at 25 per cent ad valorem, and 14,882 (weighing 1,911 pounds), valued at $5,409, dutiable at 25 per cent ad valorem and 7 cents a pound.
[7] From Sept. 22, to Dec. 31, inclusive.
[8] Preliminary figures.

One large domestic manufacturer states that this special French brand is practically the only type imported, and that it is doubtful if the total imports of suspenders aside from this brand amount to $10,000 per year.

COMPETITIVE CONDITIONS

The domestic industry is firmly established and controls the domestic market. Imports of garters, suspenders, and braces constitute, in value, less than 1 per cent of the domestic production, and generally consist of specialties of long established reputation, demanded by certain domestic consumers even at prices greatly in excess of those of comparable domestic products.

TARIFF HISTORY

Suspenders and braces were first mentioned in the act of 1883 and garters in the act of 1897. In the act of 1883 the provision was for suspenders and braces of cotton; and in the act of 1890 for suspenders and braces, elastic or nonelastic, of cotton; in the act of 1894, for suspenders and braces, of cotton or other vegetable fiber, and whether composed in part of india rubber or otherwise. The acts of 1897, 1909, and 1913, although differing slightly in their phrasing, provided for garters, suspenders, and braces, made of cotton or other vegetable fiber, either with or without india rubber. The act of 1922, paragraph 913, provides for "garters, suspenders, and braces, composed wholly or in chief value of cotton, or of cotton and india rubber, and not specially provided for, 35 per centum ad valorem." Similar articles made in chief value of other textile materials are provided for under other textile schedules.

The exact texts of the tariff provisions from 1883 to 1922, inclusive, are shown on page 14.

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FOREIGN PRODUCTION

No information is available as to foreign production.

PRICE DATA

Garters, suspenders, and braces are made in so many different styles, of such varied materials, sizes, details, etc., that no staple prices can be quoted. Each manufacturer is likely to have his individual line of styles and constructions, which in turn may follow to some extent, the changing fashion.

One large domestic manufacturer, who also imports the well-known French suspenders previously referred to, states in regard to these:

> The invoice price according to the last shipment made from Paris, March 29, 1923, was $5.25 per dozen pairs, landed at New York, including the duty of 35 per cent, and these are in turn wholesaled at about $7 per dozen, and retailed at anywhere from 89 cents to $1 per pair.
>
> As far as competition with merchandise of a similar character made in this country is concerned, the genuine French suspenders sell at about 75 per cent higher, as goods made in this country sell at about $4.25 per dozen pairs, and retail at about 50 cents per pair.

A very large firm of wholesalers, jobbers, and importers stated the landed price of this same brand, about the middle of February, 1923, as $6.03 per dozen pairs for regular lengths, selling at $6.90 per dozen pairs; and $6.63 per dozen for extra lengths, selling at $7.50 per dozen pairs.

Prices in small wares vary according to demand and competition, as is the case with staple articles, and in the line consisting largely of novelties, the novelty and the temporary demand will largely govern in the matter of price for the time being.

WAGE DATA

Table 14, page 35, shows the total average number of wage earners and the total wages paid for the years 1909, 1914, 1919, 1921, and 1923, in the industry known as "suspenders, garters, and elastic woven goods." According to these data, the average annual wages amounted to $443 in 1914, $853 in 1919, $926 in 1921, and $830 in 1923. However, these figures can not represent, relatively, the absolute average wage per operative per hour during the four years taken. In practically all industries wages were higher in 1919 than in 1921, and much higher than in 1914. Again, since the labor turnover reached its peak in 1919, owing to the market being controlled by the sellers of both merchandise and labor, it is evident that a comparison based upon the average number of wage earners appearing on a weekly or monthly pay roll affords no clear idea of the scale of wages paid. Again, the inclusion of "elastic woven goods" may mean that the figures represent many lines of articles distinct from "garters, suspenders, and braces."

Information concerning foreign wages, hours, and working conditions is not available.

COURT AND TREASURY DECISIONS

There are no decisions of importance on these articles made with cotton the component material of chief value.

IV. CORDS, TASSELS, AND CORDS AND TASSELS

General Information

DESCRIPTION AND USES

A cord may be formed by braiding, by doubling or plying, or by twisting or cabling two, three, or more strands or threads or yarns together. Cords may be larger or smaller than twine, but are generally assumed to be smaller than rope. However, neither the industry nor the trade agrees upon the precise definitions of the terms of "twine," "cord," or "rope."

Cords are manufactured of various materials, either alone or in combination with tassels or other pendant ornaments to match. They are used in upholstery, for window shades, curtains and draperies; in the clothing and garment trade, for uniforms, hats, caps, regalia, bath robes, blouses, shirts, etc.; and in the millinery trade. They may be supplied by the trade in notions and novelties for trimmings, for attaching to hand bags, purses, vanity cases, etc.

One type, known as coronation cord, is made by the compound plying and twisting of different strands or threads, the component ends being delivered at different rates in the process of twisting, so that the strand forming the surface appears completely wrapped around the inner ends of the material. The variation in the rate of delivery in the final forming of the cord has the further effect of causing the diameter of the finished article to vary throughout its length, thus lending a novel appearance to the article. Coronation cords are generally used for trimming and decorating purposes, being sewed on in various designs.

Braided cords may be either elastic or nonelastic, and may vary in size from the small tubular braided cord with a single rubber thread, such as is used for securing eye glasses, up to a cord in which the braided rubber strands and threads are of sufficient size and strength for gymnasium apparatus.

Still larger elastic cords are used in the shock-absorbing mechanism of airplanes.

Tassels are pendant ornaments for use in connection with cords. A tassel generally consists of a tuft or bunch of loosely hanging threads, strands, or cords, of one length, gathered at the upper end or in the middle, and made fast and finished by means of a button or mold. It may be attached to the cord, forming the combination of a cord and tassel. In some tassels the strands of material simply pass through the hole in the mold and, dropping over on the outside, are gathered and bound just below the mold. In more elaborate types, the tuft of strands terminate within the mold, which is sometimes covered with material harmonizing with the strands. In addition to "cords" and "tassels," which are separately mentioned, the tariff

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acts of 1913 and 1922 also specifically mention "cords and tassels," this having been made necessary by reason of a judicial decision to the effect that the combination consisting of a tassel attached to a cord is covered neither by the term "cord" nor by the term "tassel."

THE DOMESTIC INDUSTRY

The manufacture of cords and tassels, a comparatively simple process of manipulating materials, constitutes a minor branch of the small-wares industry. There is no official record as to the size of the industry, its geographical distribution, or the value of the annual output. Cotton cords are produced in cordage plants along with rope and twine, in cotton spinning mills, and in braiding plants. Both cords and tassels are also produced by specialty manufacturers who cater to the upholstery, garment manufacturing, and dress goods trades. They are also made by the manufacturers of the articles requiring their use.

One of the oldest and largest domestic companies, engaged in the manufacture of uniforms, regalia paraphernalia, trimmings, etc., established over 100 years, manufactures full lines of cords, both braided and plied, of cotton, mercerized cotton, silk, and mohair, bleached and dyed, and metal tinsel threads. With the exception of the metal tinsel threads, imported from France, all materials are of domestic manufacture. The company also manufactures full lines of tassels, as well as acorns and other pendants, matching the cords as to materials and designs. It produces a full line of three-ply twisted cords, with tassels to match, of red, white and blue yarns, for military uniforms. During the war it furnished the Government with braided cotton cords for the uniforms of enlisted men, but since the war the same articles are being made of mohair. The company imports from France a supplementary line of cords, made of twisted metal threads or strands, braided on cotton cores, as well as tassels to match.

Another large domestic manufacturer, established over a third of a century, makes a full line of cords and tassels for the upholstery trade, using both bleached and dyed yarns of cotton, mercerized cotton, silk, etc., all of domestic manufacture, but imports the tinsel materials from France. This firm imports no finished products.

EXPORTS

Exports of cords and tassels are not separately recorded.

IMPORTS

Prior to July 1, 1918, imports of cords and tassels were not recorded separately from those of other cotton small wares. The following table shows imports since that date.

TABLE 17.—*Cords, tassels, and cords and tassels, of cotton* [1]*—Imports for consumption—Revenue, 1918–1924*

Calendar year	Rate of duty	Quantity	Value	Duty collected	Unit value	Actual and computed ad valorem rate
		Pounds				*Per cent*
1918 [2]	25 per cent ad valorem		$12,973	$3,243		25.00
1919	do		17,582	4,395		25.00
1920	do		45,693	11,423		25.00
1921	do [3]	(5)	[5] 28,984	[5] 7,345		25.34
1922 [4]	do [3]	(6)	[6] 17,530	[6] 4,608		26.29
1922 [7]	35 per cent ad valorem	2,105	4,163	1,457	$1.98	35.00
1923	do	18,920	21,510	7,529	1.14	35.00
1924 [8]	do	20,004	26,343	9,220	1.32	35.00

[1] Not recorded separately prior to July 1, 1918.
[2] From July 1 to Dec. 31, 1918, inclusive.
[3] Plus 7 cents a pound on those containing cotton having a staple of 1⅛ inches or more, under emergency tariff act of May 27, 1921.
[4] From Jan. 1 to Sept. 21, 1922, inclusive.
[5] Includes imports valued at $26,694 (quantity not stated), dutiable at 25 per cent ad valorem; 1,527 pounds, valued at $2,259, dutiable at 25 per cent ad valorem and 7 cents a pound, and imports, quantity not stated, valued at $31, imported from Philippine Islands duty free.
[6] Includes imports valued at $8,886 (quantity not stated), dutiable at 25 per cent ad valorem, and 3,233 pounds, valued at $8,644, dutiable at 25 per cent ad valorem and 7 cents a pound.
[7] From Sept. 22 to Dec. 31, inclusive.
[8] Preliminary figures.

Germany, France, and England are the main sources of imports.

COMPETITIVE CONDITIONS

In cords and tassels of the ordinary types, made of cotton yarns of coarse or medium counts, there is practically no competition from abroad. The small amount of imports includes articles made of fine yarns or metal tinsel threads, mainly of specialties in which labor constitutes a relatively large proportion of the total cost.

TARIFF HISTORY

Imports of cords were specially provided for in the cotton schedules of the acts of 1883, 1890, 1894, and 1897, the rates being 35 per cent ad valorem, 35 cents per pound (but not less than 40 per cent ad valorem), 45 per cent, and 45 per cent ad valorem, respectively. In the act of 1909 cords of cotton were not mentioned under the cotton schedule, but were classed with laces and embroideries under paragraph 349 of Schedule J, and made dutiable at 60 per cent ad valorem. Tassels, of cotton,[1] were mentioned for the first time in the act of 1913, paragraph 262, which provided for imports of cords, tassels, cords and tassels, of cotton or other vegetable fiber, at 25 per cent ad valorem. Paragraph 913 of the act of 1922 provides for imports of "cords, tassels, and cords and tassels; all the foregoing composed wholly or in chief value of cotton or of cotton and india rubber, and not specially provided for," at 35 per cent ad valorem. Imports of similar articles, made wholly or in chief value of other fibers, are provided for in other textile schedules of the act of 1922.

[1] Cords, cords and tassels, of wool, were included under the wool schedule in acts prior to that of 1913.

Court and Treasury Decisions

A cotton cord used in applique work, known as a coronation cord or braid, was held dutiable as cord and not as a manufacture of cotton. (G. A. 3736, T. D. 17750 of 1896.) Cords of cotton and india rubber, the rubber being the material of chief value, were held to be dutiable as cords of cotton or other vegetable fiber in part of india rubber under paragraph 263, and not as nonenumerated manufactures of which india rubber is a component material under paragraph 352. (G. A. 3019, T. D. 15995, of 1895, affirmed *Hague* v. *United States*, 73 Fed. 810 of 1896, affirmed without opinion, 89 Fed. 1017.)

Under the act of 1897 cotton coronation cord of the kind described in G. A. 3736, T. D. 17750, *supra*, was held to be dutiable as cord under paragraph 320 and not as braid under paragraph 339. (G. A. 4113, T. D. 19156 of 1898.)

In view of the former decisions, together with subsequent practice and legislation, it was assumed that Congress used the word "cord" in paragraph 349 with the same meaning as had been attached to it under previous acts, and so-called coronation cord was held dutiable under that provision. (*Ulmann* v. *United States*, 5 Ct. Cust. Appeals, 357 of 1914.)

A cord is a string or small rope composed of several strands twisted together. Cord which has not been twisted in any way was consequently held not to be dutiable under the provisions for cords as that term was used in paragraph 349, but to be dutiable as a manufacture of cotton. (*Ulmann* v. *United States*, 4 Ct. Cust. Appeals, 77 of 1913.)

Ornaments known variously to the trade as "drop ornaments," "trimmings," "tassels," "cords and tassels," and "silk tassels," composed chiefly of silk cords and threads but in part of other material, including "soutache" braid and wooden or pasteboard molds, and fashioned by knotting the cords into designs so elaborate that they lost their continuity and identity as cords, were held not to be dutiable under paragraph 316 of the act of 1913 as "cords," or as "cords and tassels." They were tassels, but there being no provision in paragraph 316 for "tassels" as such, they were held to be dutiable as ornaments or trimmings under paragraph 358 of that act. (*Willenborg* v. *United States*, 6 Ct. Cust. Appeals, 451 of 1915.)

V. SPINDLE BANDING

General Information

DESCRIPTION AND USES

Spindle banding may be a round cord, made by doubling and twisting strands of yarn or hard twisted roving, or it may be a narrow tape specially designed and woven for the use intended.

Spindle banding is used on spinning and twisting "mules," on ring spinning and twisting frames, and on spooling frames, for the purpose of transmitting power from the revolving drum or cylinder of the machine to the spindles, causing them to revolve. The drums or cylinders extend lengthwise of the machines and parallel with the spindle rails which contain the uniformly spaced spindle bases, and which, in turn, support the revolving spindles. While the "mule" may contain only one row of spindles, ring spinning and twisting frames and spooling frames are usually built symmetrically, with a row of spindles on each side and the drum or cylinder in the center of the frame, the axis of the drum or cylinder being a continuation of the driving shaft of the machine. The drum is usually a sheet metal cylinder, ranging from 7 to 8 inches in diameter and, in the case of cotton spinning frames, may revolve at speeds from 450 to 1,800 revolutions per minute, according to the ratio, in diameter, of the drum to the spindle "whorl," and the desired speed of the spindles, which in turn depends upon the nature of the product of the machine.

Each spindle is equipped with a "whorl" which, acting as a driven pulley, affords the driving contact with the spindle band. In order to attain the necessarily high spindle speed, the whorls are much smaller in diameter than the drum or cylinder, the diameter of the drum exceeding that of the spindle whorl by as much as five to nine times, so that the spinning spindles, on medium cotton yarns, sometimes attain speeds of over 9,000 revolutions per minute.

Up to a few years ago all spinning, twisting, and spooling spindles were equipped with whorls containing V-shaped grooves, adapted to the round type of spindle banding; for this reason, by far the greater proportion of spindles are still operated with round bands. In the use of the round band, each spinning or twisting spindle requires an individual band, which, extending around the horizontal driving drum and acting as a belt, makes a quarter turn upon reaching the whorl of the vertical spindle. Such round bands are made to length, one end having a doubled loop and the other terminating in the two separate strands forming the band. The band, in being "tied on," is threaded around the drum, and the ends gathered at the base of the spindle, each strand at the loose end being passed through the loop at the other end; a flat knot is used to tie the two strands together with the proper amount of tension in the band, the surplus stock of the ends being cut away. The band, now an endless belt, is then run

into the groove of the whorl of the spindle. The bands of spooling spindles using the round type of band are larger and longer than those on spinning spindles, each band being threaded in and "tied on" as above described, but making contact with two opposite spindles, one on each side of the frame. In this way, each band drives two spindles, except at the ends of the frames, where one band may be made to drive three spindles.

In the use of the round band, the tension is greatest when the band is first tied on. In operation it immediately begins to stretch and become slacker and slacker, finally breaking from wear and tear, generally at the knot. Where the band has not broken, it may eventually become so slack that the speed of the spindle is reduced through excessive slipping to such an extent that the yarn, lacking sufficient twist, becomes so bulky as to break down at the traveler, or so weak as to break at the rolls. In such cases the band must be cut off and replaced by a new one.

Because the speed of spindle must be constant and a uniform tension maintained in the driving band, practically all spinning, twisting, and spooling spindles of new machinery installed have been equipped with flanged and crown-faced whorls, driven with tape bands. Such frames are equipped with compensating idlers, one to each four spindles, around which the tape band makes contact and is guided for the proper routing.

In the tape band driving four spindles, the end of the band is led around the drum, around the whorls of the four spindles—two on each side of the frame—and around the compensating idler. The band is cut to the necessary length from the stock, the ends gathered under tension and lapped, and secured by stitching the lap through with a portable hand-stitching machine. In operation, the tape band thus acts as an endless belt under constant tension, maintaining the maximum spindle speed, and enabling the machine to deliver a product practically uniform in twist and strength. For this purpose the tape-band drive is superior to the round band.

In the various types of machines used for spinning, twisting, and spooling, great variations in the types and qualities of products call for corresponding variations in the sizes and types of spindles, which in turn, require suitable types of banding. For this reason, tape banding may vary greatly in width (from $\frac{3}{8}$ inch to 2 inches) as well as in texture.

In a frame using the round-band type of drive, the tape band can not be substituted for it without a complete change of spindle whorls and without the addition of compensating idlers and other necessary equipment. The cost of this remodeling is not justifiable under most conditions.

THE DOMESTIC INDUSTRY

History.—Textile spinning requires spindle banding, and the development of spindle banding has progressed with the demand for it. Round spindle banding, being the simplest and most easily made, was naturally first adopted, and the whorls of spindles adapted to it. Although the greater number of spindles in use are adapted to and require the round band, yet by far the greater number of new frames now being installed contain spindles adapted to the tape drive, which, introduced within the past few years, has proved the more satisfactory and economical.

Geographical distribution.—Common round spindle banding is generally produced in the plants where used. Most of that in the tape form is purchased from manufacturers who specialize in the various types called for by the trade; the greater portion is produced in the New England and Middle Atlantic States. Some large spinning plants using the tape-band drive are equipped with one or more specially designed narrow-ware looms for weaving their banding as required, and do not purchase any.

Organization and equipment.—In making spindle banding of the round type from yarn or roving, the only equipment required is a banding machine, which may be of the simple type, tended by an operative, or it may be one of the more modern automatic type. Tape spindle banding is woven on narrow-ware looms, machinery being also required for the preparation of the warp and filling yarns, generally purchased by manufacturers of the banding.

Methods of production and materials used.—The great bulk of ordinary round spindle banding is consumed by cotton spinning mills. At first, such banding was made of cotton yarns, but the perfection of the automatic banding machine has led to the general use of specially hard-twisted cotton roving, really the most satisfactory material.

In making the round band on the simple banding machine, the required number of ends of hard-twisted roving or yarn are gathered from a creel of bobbins into a strand, which is pulled through a guide by hand and looped to the projecting hook of one of a pair of mutually geared, horizontally revolving spindles. It is then drawn along the length of the frame toward the other end of the machine and around a horizontally sliding, counter-weighted hook, and back again toward the head of the machine, where it is looped to the projecting hook of the other horizontally revolving spindle and cut loose from the stock. The belt is then shifted from the idler pulley of the machine, and the horizontal spindles, actuated by the mated gearings, are caused to revolve rapidly in the same direction, thus putting the primary twist into the two strands. When, through the contraction caused by the twist, the sliding hook reaches a predetermined point, the belt is shifted to another fast pulley which, by means of a clutch, causes the two mated spindles to revolve as a unit but in the opposite direction, the final twist combining the two original strands into one. When the sliding hook, through the extra contraction, has reached a certain point, the machine knocks off. The band, which is then completed and of a uniform length, is detached from the sliding hook, and the two strands at the other end are cut loose from the hooks of the revolving spindles. This cycle of operations is repeated for the production of each band, the machine calling for the constant attention and manipulation of an operator. With the automatic banding machine, practically the same operations are performed in detail, but the necessary attachments enable the machine to act continuously and automatically repeating the cycles over and over after having been equipped with the necessary stock and properly started. Most cotton-spinning plants using round bands are now equipped with the automatic banding machine.

Very long life is not expected of the ordinary round band. Its durability depends upon various factors, such as the size and twist of the yarn or roving from which it is made, the quality and staple of the cotton entering into it, the tension under which the band is tied

on, the diameter of the spindle whorl, the size and speed of the spindle and the load. Atmospheric conditions within the spinning room also affect the life of the band. Bands made of roving do not last as long as those made of yarn, but they are preferred on account of the stretch before breaking, in the case of the roving band, being considerably less; as a consequence, in a spinning room where roving bands are used, better yarn will be produced. Practical experience has shown that one modern automatic banding machine will furnish sufficient roving bands for an equipment of 40,000 to 50,000 cotton-spinning spindles, producing medium or print-cloth yarns under ordinary conditions.

The average cotton spinning mill using round bands generally produces them within its own plant; some small spinning plants, however, may purchase round bands from other mills. Where several small mills in the same locality are under one management, it is customary for all the bands required to be made at one of the plants.

Some large spinning plants equipped with the tape band drive also weave their own tape banding, using their own yarns for the purpose; to that end they are equipped with one or more narrow-ware looms specially designed for the purpose. But the mills using woven-tape banding generally purchase it through supply houses or directly from the manufacturers.

Another type of round-spindle banding, used largely in worsted spinning, is made of two strands of yarn, twisted and doubled and counter twisted, but with a doubling of the ends of the strands back into the stock, the bands being completed at a uniform length and with each end terminating in a loop. A separate band is required for each spindle, and in banding the spindle the ends of the band are brought together and connected with a suitable coupling-wire link.

A round type of spindle banding, recently developed by a domestic manufacturer, consists of a braided cord, spotted in the process of braiding at certain points according to the length required. In applying this band, it is led around the drum and the spindle whorl, the ends brought together, and the strands of one end, passing through the loop at the other, are drawn up by tension until the spots coincide; the ends are then tied and the surplus stock cut away. A braided band of this type is said to run with less slip and stretch, but its cost is greater than that of the ordinary band, and it has not been introduced commercially.

Tape spindle banding is manufactured in various widths, from three-eighths inch to 2 inches, and the thickness, weight, and texture vary according to the use required. It is woven both single and ply, the single weave being generally of herringbone twill.

Round bands may be made of grey cotton yarn, but are now generally made of hard-twisted cotton roving. Tape banding is generally woven of grey cotton yarns.

Experiments have been made with bands of pure flax, treated to prevent stretch and shrinkage during use, but while these may show extra strength it is very doubtful if they would prove economical in actual use.

Production and consumption of spindle banding are not recorded.

EXPORTS

Statistics of exports are not available.

IMPORTS

Imports of spindle banding are not recorded separately. Table 18 shows combined figures for imports of wicking, spindle banding, and lining for bicycle tires, from August 28, 1889, to October 3, 1913, inclusive, together with total figures for imports of wicking and spindle banding, from October 4, 1913, to December, 31, 1924, inclusive. The annual average of the above totals is very small, and that of the spindle banding, alone, is less. Imports consist mostly of small lots of special round banding for use in English worsted-spinning machinery installed in some few domestic worsted spinning plants. Small lots of tape-woven banding are also imported for the same purpose. Imports are generally from England.

TABLE 18.—*Lamp, stove, and candle wicking, woven, braided, or twisted, and spindle banding, of cotton (or other vegetable fiber)*[1]*—Imports for consumption—Revenue, 1895–1924*

Year	Rate of duty	Quantity	Value	Duty collected	Unit value	Actual and computed ad valorem rate
Fiscal:		*Pounds*				*Per cent*
1895 [2]	45 per cent ad valorem		$8,459	$3,807		45.00
1896	do		4,103	1,846		45.00
1897	do		5,113	2,301		45.00
1898 [3]	do		11	5		45.00
1898 [4]	10 cents per pound and 15 per cent.	29,158	9,215	4,299	$0.3160	46.65
1899	do	27,736	8,576	4,060	.3092	47.34
1900	do	30,838	8,886	4,417	.2882	49.70
1901	do	38,571	11,115	5,518	.2882	49.64
1902	do	46,256	13,584	6,663	.2937	49.05
1903	do	76,586	22,056	10,967	.2880	49.72
1904	do	68,577	20,310	9,904	.2962	48.76
1905	do	62,157	18,541	8,997	.2983	48.52
1906	do	79,816	23,402	11,492	.2932	49.10
1907	do	110,773	32,417	15,940	.2926	49.17
1908	do	73,664	23,531	10,896	.3194	46.31
1909	do	56,921	18,009	8,394	.3164	46.60
1910	do	81,283	24,073	11,739	.2962	48.77
1911	do	58,970	18,269	8,637	.3098	47.28
1912	do	52,492	17,292	7,843	.3294	45.36
1913	do	44,653	13,771	6,531	.3084	47.43
1914 [5]	do	10,307	4,000	1,631	.3881	40.77
1914 [6]	25 per cent ad valorem	36,901	11,998	2,997	.3251	25.00
1915	do	37,932	11,758	2,939	.3100	25.00
1916	do	20,074	5,105	1,276	.2543	25.00
1917	do	21,371	6,918	1,729	.3237	25.00
1918	do	17,600	8,371	2,093	.4756	25.00
1918 [7]	do	7,095	10,285	2,571	1.4496	25.00
Calendar:						
1919	do	12,891	7,930	1,982	.6152	25.00
1920	do	11,779	8,045	2,011	.6830	25.00
1921	do.[8] [9]	12,147	6,234	1,559	.5132	25.00
1922 [9]	do.[10]	11,909	5,481	1,370	.4602	25.00
Annual average [11]		40,543	13,777	5,926	.3398	43.01
1922 [12]	10 cents per pound and 12½ per cent.	3,659	1,875	600	.5124	32.01
1923	do	20,101	12,006	3,511	.5972	29.24
1924 [13]	do	12,945	7,875	2,279	.6083	28.94

[1] Includes "lining for bicycle tires" in years under act of 1894.
[2] From Aug. 28, 1894, to June 30, 1895, inclusive. Imports not recorded prior to act of 1894.
[3] From July 1 to July 24, 1897, inclusive.
[4] From July 25, 1897, to June 30, 1898, inclusive.
[5] From July 1 to Oct. 3, 1913, inclusive.
[6] From Oct. 4, 1913, to June 30, 1914, inclusive.
[7] From July 1 to Dec. 31, 1918.
[8] Plus 7 cents a pound if containing cotton having a staple of 1⅛ inches or more, under emergency tariff act of May 27, 1921.
[9] From Jan. 1 to Sept. 21, 1922, inclusive.
[10] Includes 12,142 pounds, valued at $6,232, dutiable at 25 per cent ad valorem and 5 pounds, valued at $2, dutiable at 25 per cent ad valorem and 7 cents a pound.
[11] 10,251 days, equivalent to 28.08 years.
[12] From Sept. 22, to Dec. 31, inclusive.
[13] Preliminary figures.

COMPETITIVE CONDITIONS

The ordinary round spindle banding used by domestic cotton mills can be made by them more cheaply than it can be purchased; further, banding of this type produced by domestic manufacturers for the trade has no competition from imports, owing to the comparatively low prices prevailing as the result of competition within the home market. This applies also to the special round banding with looped ends, except in a few instances where domestic worsted-spinning plants, equipped with English spinning machinery, arbitrarily insist on the use of the imported English banding, even at a greater landed price than that of the comparable domestic article. For the same reason small lots of tape-woven bands are occasionally imported.

Domestic bands are made of a better grade of cotton than that contained in the imported article.

TARIFF HISTORY

Spindle banding was not mentioned in the tariff acts prior to 1894. Imports of spindle banding, made of cotton or other vegetable fiber, were made dutiable at 45 per cent ad valorem in the act of 1894, paragraph 263; at 10 cents per pound and 15 per cent ad valorem in the acts of 1897, paragraph 320, and 1909, paragraph 330; and at 25 per cent ad valorem in the act of 1913, paragraph 262. Paragraph 913 of the act of 1922 provides for imports of "spindle banding, made of cotton or other vegetable fiber," with the compound duty of 10 cents per pound and 12½ per cent ad valorem.

FOREIGN PRODUCTION

Spindle banding is necessarily produced in connection with spinning in all countries where yarns are manufactured, but there are no statistics available as to foreign production. Spindle banding forms an unimportant item in the small-wares group. As stated, most mills produce their ordinary bands as needed and can purchase the necessary types of tape banding in the domestic market to advantage. Because of the nature of the article, the same conditions seem likely to hold good in each country where the spinning industry is carried on.

PRICE DATA

There are no published price quotations on spindle banding. Any price named will depend upon the price of cotton at a given time, the type of band, its construction, and the quantity under consideration. A large domestic manufacturer states that the price is regulated by the competition among domestic dealers and manufacturers and is on a basis that allows very little profit, this condition resulting in prices underselling landed imports.

A statement of this manufacturer, dated February 28, 1923, gives data, on the pound basis, as follows:

	Cents
Average selling price of tape and round band	65.8
Average cost of yarns	36.7
Average expenses	28.0
Average cost, including yarn	64.7
Average profit per pound	1.1

About the 1st of February, 1923, this manufacturer imported some round endless banding from England for a special customer, for use in English worsted-spinning machinery. The English price was 2s. 6d. (58.4 cents) per pound, which, including the duty, totaled 75.7 cents per pound, exclusive of freight and insurance. Some five-eighths-inch tape banding was also imported, which cost, retail price, in England, as a small special lot, 3s. 6d. per pound; this, together with the duty, amounted to $1.02 cents per pound, not including freight and insurance. This manufacturer maintains that domestic bands are underselling the English bands by from 30 to 40 per cent.

WAGE AND COST DATA

Spindle banding not being separately classified, no information is available as to domestic wages and costs, nor is information available as to foreign wages and costs. Labor cost is a small item in the case of round banding, while in the case of tape-woven banding the combined items of labor cost and overhead expense may amount to 40 per cent of the total cost.

COURT AND TREASURY DECISIONS

Cord, one-quarter of an inch in diameter, composed of numerous strands of cotton yarn, hard-twisted and doubled, and designed for use in textile machinery for transmitting power, was held to be dutiable under paragraph 263 as "cords" or "spindle banding" at 45 per cent ad valorem and not as an unenumerated manufacture of cotton at 35 per cent under paragraph 264. (G. A. 4070, T. D. 18873 of 1898.) Such cord was likewise classified under the act of 1897. (G. A. 6462, T. D. 27664 of 1906.)

The provision in paragraph 330 of the act of 1909 for "banding for machinery" was held to be more specific than the provision for tapes not specially provided for and the provisions for webbings. (Abstract 33196, *Nairn Linoleum Co.* v. *United States*, 3 Ct. Cust. Appeals, 394, of 1913; see G. A. 7492, T. D. 33731 of 1913.)

VI LAMP, STOVE, AND CANDLE WICKING

General Information

DESCRIPTION AND USES

Wicking used in the manufacture of candles, and wicks, used in lamps and stoves, are so familiar that any description of them in pamphlet of this kind appears unnecessary.

Candle wicking is usually produced by twisting, cabling, or braiding yarn or threads. The type is composed of a wire of fuse-metal alloy, [illegible] with cotton threads; the threads of yarn afford the [illegible] capillary expansion, and the fusible wire serves to hold the [illegible] at the top when burning, the wire melting at the end as [illegible] Wicks of this kind are used in candles for [illegible]

[illegible] wicking is generally a woven narrow fabric, and of a [illegible] or flat formation. It is generally woven flat, in the double [illegible] with a hollow warp. A loose picking warp [illegible] of maximum [illegible] producing a hemispherical flame. The [illegible] is made from threads of an inch in. Another [illegible] is called human's lamps and stoves. It is a [illegible] this kind is woven as [illegible] the middle of [illegible] the warp is the [illegible] with an [illegible] [illegible] [illegible]

Geographical distribution.—One standard textile directory shows the distribution of plants manufacturing wicking as follows: Six in Massachusetts; 3 in Connecticut; 2 each in Rhode Island, New York, Pennsylvania, and Kentucky; and 1 each in Alabama, Illinois, Indiana, Maryland, Ohio, Oklahoma, and Tennessee.

Organization and equipment.—No statistics are available as to the organization and equipment of plants engaged primarily in the manufacture of wicking. In large plants where general lines of small wares are produced, wickings are made on machines that can be switched on or off for other products. Looms and braiding machines used in the production of wickings are included with those grouped under the small wares heading.

Materials used.—Lamp and stove wickings are generally constructed of medium and coarse cotton yarns, usually of low-grade stock, although in braided wicks cotton rovings are used as a core. Cotton is practically the only fiber used, although it, or even all cotton, the wording of paragraph 913 of the act of 1922 includes wicking made of other vegetable fibers.

Methods of production.—There are three general types of wickings: braided wicking, flat-woven wicking, and tubular-woven wicking.

Braided wickings are generally not braided solid, but around an inner core, usually of soft cotton roving.

Flat-woven wickings are made on the ply-fabric principle with coarse ply warp yarns and finer ply filling yarns.

Tubular wickings are also ply-woven of coarse yarns, some of the two-ply warp, soft-twisted, and the three-ply filling.

Woven wickings are products of narrow-ware looms equipped for developing the various types. Twisted wickings are developed in machines designed for the purpose. In the production of wickings, dyed threads are sometimes introduced for advertising or trade-mark purposes and for the same reason some wicks may be constructed entirely of dyed yarns.

Designing, drafting, and yarn preparation: Descriptive details covering these stages of manufacturing are fully outlined elsewhere under the heading of small wares. The yarn generally used in wickings being rather coarse, of short staple, and of low-grade stock, is easily and economically produced in plants that do their own carding and spinning. In plants where no carding or spinning is carried on, yarns are purchased as required, generally in condition best suited for subsequent handling with a minimum of processes preparatory to braiding or weaving.

Finishing: Wickings after leaving the braiding machine or loom undergo practically no finishing process, being ready for shipment and packed for the trade. Cleaning and trimming are done in the yarn or in the raw stock.

Production and statistics of.—Statistics of small wares, all made wickings are not given separately from those of other small wares in the census reports.

IMPORTS

Imports are not separately [illegible] an indication of [illegible] the United States [illegible]

$32,000 in 1923, and $38,000 in 1924. As shown in Table 5, the United States supplies about seven-eighths of the total Canadian imports in this line.

IMPORTS

Imports of lamp, stove, and candle wicking are not shown separately, but in combination with spindle banding, and lining for bicycle tires. (See Table 18, p. 49.)

Sources of imports are not shown in the statistics. Imports of wicking at the present time are negligible. A consumer of candle wicking who uses both the domestic and the imported article states that the landed price of the imported article is practically the same as the price of the comparable domestic article.

TARIFF HISTORY

Lamp, stove, and candle wicking was not mentioned in the acts of 1883 and 1890. The act of 1894, paragraph 263, provided for lamp or candle wicking at 45 per cent ad valorem; the act of 1897, paragraph 320, for lamp, stove, or candle wicking, at a compound duty of 10 cents per pound and 15 per cent ad valorem; the act of 1909, paragraph 330, for lamp, stove, or candle wicking, at a compound duty of 10 cents per pound and 15 per cent ad valorem; the act of 1913, paragraph 262, for lamp, stove, or candle wicking, at 25 per cent ad valorem. The present law, the act of 1922, paragraph 913, provides for imports of lamp, stove, or candle wicking, at a compound duty of 10 cents per pound and 12½ per cent ad valorem. In all the above acts, the provisions are for wicking made of cotton or other vegetable fiber.

COMPETITIVE CONDITIONS

A comparison of the import statistics shown in Table 18 with those of lamp wicks imported into Canada from the United States, as shown in Table 5, indicates that the value of Canadian imports of lamp wicks from the United States averages five times the combined values of the total imports into the United States of lamp, stove, and candle wicking and spindle banding. This, together with the fact that the greater portion of the Canadian imports are for the most part from the United States, would indicate that wicking is produced in the United States on a competitive basis with imports, especially in plants producing their own yarns.

Court and Treasury Decisions

Under the act of 1890 lamp wicking composed of four-ply soft cotton yarn having the general appearance of a braid or cord, but not commercially known as a braid or cord, was held to be dutiable as a manufacture of cotton, rather than as cotton cord. (G. A. 2536; T. D. 14853 of 1894.)

Merchandise claimed to be lamp wicking, shown as used in a kerosene lamp and as conducting kerosene to the flame after receiving it from another wick acting as a feeder, was held to be dutiable as lamp wicking and not as a manufacture of cotton. The board said, "This is the function of a lamp wick, and the fact that it is used in some particular kind of a lamp is, in our opinion, of no consequence." (Abstract 27624, T. D. 32161 of 1912.)

VII. BOOT, SHOE, AND CORSET LACINGS

General Information

DESCRIPTION AND USES

Boot, shoe, and corset lacings, made of cotton or other vegetable fiber, may be either round, flat, or tubular. The round may consist of strands of yarn or thread twisted or cabled together or of a solid, braided cord. The flat and the tubular may be either woven or braided. Some years ago a very wide woven silk lace was in demand for shoes, but at the present time (1924) practically all laces, round, flat, or tubular, are products of braiding machines. Lacings are made in different lengths, sizes, textures, and colors, and are finished with tips at the ends.

THE DOMESTIC INDUSTRY

History.—The development of the manufacture of lacings has kept pace with that of the articles calling for their use.

Geographical distribution.—Statistics are not available as to the manufacture of lacings as a separate industry. A standard textile directory lists plants engaged in the production of "laces, shoe and corset," as follows: Rhode Island, 37; Massachusetts, 25; Pennsylvania, 7; New Jersey, 6; New York, 5; Connecticut, Illinois, Ohio, 2 each; and Missouri, 1.

Organization and equipment.—No statistics are available as to the organization and equipment of plants engaged primarily in the manufacture of lacings. Although some large plants manufacture these as their chief products, many large plants turning out the general line of products of the small-wares trade make all types of lacings. The braiding machines and other equipment employed in the manufacture of lacings are not enumerated separately, but are included in the total equipment reported for the full line of cotton small wares. The equipment is mainly of domestic manufacture.

Materials used.—The chief materials used are cotton yarns, plain or mercerized. Some lacings, particularly for corsets, are made of silk and artificial silk, and some corset lacings also contain elastic rubber threads. One large manufacturer makes a line of corset lacings of elastic braid. Another, some years ago, made lacings from polished "iron yarn" imported from Germany. Lacings are made of bleached and dyed cotton yarns of all suitable colors. No flax is used in the domestic industry. Fine laces are made of staple cottons.

The tipping of the laces forms an important part of the manufacture. Tips stamped from metal are attached, rolled up and fastened by crimping or beading. Laces are also tipped with wires wrapped and twisted out to a point. Some laces of the finer types, bleached or colored, are tipped with strips of celluloid, colored to match, the celluloid being softened and cemented to the lace with an application of acetone. These are known as invisible tips.

Methods of production.—Boot, shoe, and corset lacings were in the main formerly produced as cords, by twisting, and were commonly

known as "strings." Some wide shoe laces are woven on narrow-ware looms, as are also certain types of corset lacings containing elastic threads. At the present time, however, boot, shoe, and corset lacings are produced almost entirely by braiding, and are made in flat, tubular, and cord types. In Section XI will be found a description of the braiding machine and an explanation of braiding operations applying also to the braiding of boot, shoe, and corset lacings. In the braiding of lacings, a machine or unit produces only one end or article. In a recent issue of a textile journal mention is made of a newly developed type of shoe-lace machine said to be capable of braiding as many as forty separate laces simultaeously, but the mechanical and technical details of the machine are not described.

Domestic production and consumption statistics of boot, shoe, and corset lacings are not recorded separately from those of other small wares.

EXPORTS

Exports of boot, shoe, and corset lacings are not recorded separately, but are known to exceed imports. Statements from the trade show exports to Canada, Brazil, Argentina, the Philippines, Cuba, and various other countries, including China. An indication of the extent of this trade is afforded by Canadian statistics, which show imports to Canada from the United States of "boot, shoe, shirt, and stay laces," valued at $18,376 in 1911, $18,232 in 1912, $42,788 in 1913, $35,959 in 1914, $49,910 in 1915, $141,467 in 1916, $271,886 in 1917, $145,721 in 1918, $227,005 in 1919, $247,833 in 1920, $188,246 in 1921, $84,704 in 1922, $110,527 in 1923, and $82,119 in 1924, all for fiscal years ended March 31. Of the total values of Canadian imports in this line the proportion from the United States amounted to 8 per cent in 1911, increased to 14 per cent in 1914, to 35 per cent in 1915, and to almost 95 per cent in 1917, decreasing later but amounting to 72 per cent in 1923, and to 58 per cent in 1924.

The above figures, together with other statistics, tend to show that domestic manufacturers are retaining a substantial portion of the export trade in lacings secured during the war.

IMPORTS

Imports for consumption, 1891–1924, of boot, shoe, and corset lacings are shown in Table 19. Quantities were expressed in pounds until 1914, in which year the gross (i. e., 12 dozen) was adopted as the unit of measure, but the pound is again used under the act of 1922. The origin of imports is not shown in the statistics, but Germany is normally the main source, with smaller amounts from England, France, and Belgium.

A comparison of imports for consumption of boot, shoe, and corset lacings with Canadian imports from the United States of boot, shoe, shirt, and stay lacings, from October 4, 1913, to September 21, 1922, inclusive, shows that in total annual values the former averaged about $13,000 while the latter averaged about $158,000. During the period of the act of 1913, therefore, American exports to Canada alone averaged annually about twelve times the total imports to the United States of boot, shoe, and corset lacings. In 1923 and 1924, this ratio has more than doubled.

TABLE 19.—*Boot, shoe, and corset lacings of cotton (or other vegetable fiber)*[1]—*Imports for consumption—Revenue, 1891–1924*

Year	Rate of duty	Quantity	Value	Duty collected	Unit value	Actual and computed ad valorem rate
Fiscal:		*Pounds*			*Per pound*	*Per cent*
1891[2]	35 cents per pound, with minimum ad valorem of 40 per cent.	278,413	$188,193	$102,770	$0.6760	52.61
1892	do	450,504	314,307	165,769	.6977	52.74
1893	do	568,624	395,978	208,610	.6964	52.68
1894	do	536,498	410,239	209,685	.7647	51.11
1895	do	56,218	57,083	25,688	1.0154	45.00
1895	45 per cent ad valorem	(3)	813,557	366,101		45.00
1896	do	(3)	761,780	342,801		45.00
1897	do	(3)	944,038	424,817		45.00
1898	do	(3)	11,538	5,192		45.00
1898	25 cents per pound and 15 per cent ad valorem.	239,814	124,844	78,680	.5206	63.02
1899	do	157,148	88,590	52,575	.5637	59.35
1900	do	167,326	99,084	56,694	.5922	57.22
1901	do	144,299	89,282	49,467	.6187	55.40
1902	do	91,382	62,033	32,151	.6788	51.88
1903	do	100,270	70,090	35,581	.6990	50.76
1904	do	115,137	77,656	40,433	.6745	52.07
1905	do	75,760	52,212	26,772	.6892	51.28
1906	do	71,395	49,652	25,297	.6955	50.95
1907	do	90,845	62,527	32,090	.6883	51.32
1908	do	87,215	67,293	31,898	.7716	47.39
1909	do	79,705	56,625	28,420	.7104	50.19
1910	do	75,644	48,871	26,242	.6461	53.70
1911	do	55,481	36,910	19,407	.6653	52.58
1912	do	48,748	31,279	16,879	.6416	53.96
1913	do	46,821	29,462	16,125	.6292	54.73
1914	do	9,884	6,313	3,418	.6387	54.14
		Gross			*Per gross*	
1914	25 per cent ad valorem	19,333	26,987	6,747	1.3959	25.00
1915	do	13,979	22,436	5,609	1.6050	25.00
1916	do	3,335	5,954	1,488	1.7853	25.00
1917	do	13,812	9,078	2,269	.6573	25.00
1918	do	29,664	24,482	6,120	.8253	25.00
1918[4]	do	1,359	911	227	.6703	25.00
Calendar:						
1919	do	1,368	1,640	410	1.1988	25.00
1920	do	5,733	11,555	2,889	2.0155	25.00
1921	do.[5]	(6)	10,912	2,886		26.45
1922[7]	do.[5]	(8)	3,777	948		25.07
Annual average[9]			158,349	76,661		48.41
		Pounds			*Per pound*	
1922[10]	15 cents per pound and 20 per cent ad valorem.	453	676	203	1.4923	30.05
1923	do	1,724	2,734	805	1.5858	29.44
1924[11]	do	1,652	3,920	1,032	2.3728	26.32

[1] Includes cords and braids under acts of 1890 and 1894.
[2] From Oct. 6, 1890, to June 30, 1891, inclusive.
[3] Not recorded.
[4] From July 1 to Dec. 31, 1918, inclusive.
[5] Plus 7 cents a pound on those containing cotton having a staple of 1⅜ inches or more, under emergency tariff act of May 27, 1921.
[6] Included 2,107 gross (weight not stated) dutiable at 25 per cent ad valorem, and 1,425 gross (weighing 2,256 pounds) dutiable at 25 per cent ad valorem and 7 cents a pound.
[7] From Jan. 1 to Sept. 21, 1922, inclusive.
[8] Includes 2,706 gross (weight not stated) dutiable at 25 per cent ad valorem, and 192 gross (weighing 53 pounds) dutiable at 25 per cent ad valorem and 7 cents a pound.
[9] Annual average per year of 365 days, for the period covering five tariff acts from Oct. 6, 1890, to Sept. 21, 1922, inclusive. As this period included 11,673 days, almost exactly 32 years, the annual average was obtained by dividing the total imports during this period by 32.
[10] Sept. 22 to Dec. 31, inclusive.
[11] Preliminary figures.

COMPETITIVE CONDITIONS

It will be seen from the above that the domestic industry is well established, this being especially the case in lacings made of cotton yarns of coarse and medium numbers. Some lacings, however, are made from fine yarns of combed Sea Island cotton, but so long as these yarns are within the domestic spinning range, competition from imports is not great. One large domestic manufacturer, who spins and spins his own cotton yarns, states that his company exports to foreign countries, and that while there has hitherto been no competition from Europe, the competition among domestic manufacturers is so intense that manufacturing is profitable only on a [illegible] basis. He mentions the case of a special lace sold by his [illegible] at an actual loss of 10 per cent simply to retain orders against [illegible] competition. Several large firms, jobbing and importing [illegible], say that they are unable to import lacings to advantage at present prices and duties. Some jobbers of domestic and [illegible] import laces from England for customers who prefer the imported article to the domestic article of equal quality and [illegible] selling price.

TARIFF HISTORY

[illegible] and corset lacings of cotton were provided for in the act of [illegible], paragraph 334, at a specific duty of 35 cents per [illegible] and corset lacings made of cotton or [illegible] were dutiable at 45 per cent ad valorem in the act of [illegible], at 25 cents per pound and 15 per cent ad valorem in the act of 1909, paragraph 321, and in the act of 1913, paragraph 319, at 25 cents per pound and 15 per cent ad valorem. Boot, shoe, and corset lacings made of cotton or other [illegible] were dutiable in the act of 1922, paragraph 913, at [illegible] cents per pound and 20 per cent ad valorem.

[illegible] and Trade Conditions

[illegible] imports in lengths of from [illegible] laces by being [illegible] were held to be [illegible] the act of [illegible]

VIII. LOOM HARNESS, HEALDS, AND COLLETS

General Information

DESCRIPTION AND USES

Loom harness, of twine, when ready for use, is made up of healds or heddles, spread and spaced on shafts, and suspended in the loom frame by means of strapping, cords, or collets, each such frame of healds being known as a "shade." The harness equipment of an ordinary fly-shuttle cam loom consists of at least two and possibly more shades. In ordering harness for such looms, the specifications would include: The number of sets of harness, the number of shades per set, the number of eyes per shade and their spread on the shafts in inches, the depth of the shade inside or between the shafts, the dimensions of the shafts, the number of screw-eyes and their spacing in the top and bottom shafts, and the type of twine to be used in the healds. While the above plan covers the harness used in the ordinary fly-shuttle cam loom for the weaving of sheetings, shirtings, drills, ducks and other standard fabrics, including the greater portion of the cotton goods weaving industry, yet special healds, equipped with special eyes, usually of metal, and known as "couplings" are used as individual units in Jacquard weaving.

The heald or heddle, sometimes called the "eye," is a unit of the harness and its duty is to sustain and control the position of one single end or thread of the warp in the loom. The harness in a loom consists of two or more shades, each shade made of the proper number of healds, grouped and spaced on the shafts of that shade.

Collets are cords used for sustaining and actuating the "mails" used on Jacquard looms, referred to later.

In fly-shuttle cam looms the harness frames are usually supported by leather strapping, each strap containing a hook at one end for connection with the screw eye in the harness shaft. Strapping also extends from the harness jacks of the bottom shafts to the harness treadles, the movement of the harness shades being positive, both up and down, and controlled by the treadles, which in turn are actuated by the cams, this being the arrangement adapted for cam looms. Where the design of the fabric to be woven calls for a number of harness shades exceeding the practical possibilities of the cam motion, dobby shedding motions are adopted which increase the harness capacity up to 32 shades or separate harness units. While these shades could all be of standard twine harness, made of cotton or other vegetable fiber, as provided for in paragraph 913, yet, in practice, the harness shades in dobby weaving are generally made up of wooden frames containing an upper and a lower metal shaft, on which are strung detachable metal heddles; the latter may be made of special steel wire, doubled and soldered, or twisted, or finished from special flat wire, each heddle containing an eye about the center of its length and equipped with a loop at each end for suspension on the metal shafts. Metal heddles vary in size, length, and details for different uses. In the harness described above they are not fastened together in any manner and, up to the full capacity of each shade, any number necessary can be assembled in a frame.

In the case of twine harness, the number of eyes on a shade, and their spacing, are fixed, thus limiting the number of ends per inch that can be woven in the warp, except where weaves with fewer ends per inch may be produced by skipping eyes, at a uniform rate, in the web drawing, leaving a number of vacant eyes in each shade. For this reason, many cam looms are also equipped with heddle frames and metal heddles, where constructions in the weave room are frequently changed and where elasticity in designs is required, and where otherwise a large stock of twine harness of various capacities would need to be kept in reserve. While metal heddles enter largely into harness for weaving, they are not embraced in the classifications under paragraph 913, which includes only loom harness, healds, and collets made wholly or in chief value of cotton or other vegetable fiber. Metal heddles used in the domestic weaving industry are mainly manufactured in domestic plants; some are imported under schedule 3, paragraph 316, of the act of 1922.

When the pattern or design of the proposed fabric calls for a shedding of the warp threads beyond the capacity of the dobby, recourse is had to the Jacquard shedding head. In the healds used in Jacquard weaving, eyes known as "mails" are provided and may be of bronze or glass.

In advance of hanging up an ordinary loom for the weaving of a fabric, the prepared warp, consisting of the total warp threads that are to go into the product, is "drawn-in," each unit end or thread of the warp being drawn through its appropriate harness-eye, or heddle, according to the draft plan, and each end being subsequently drawn through the proper dent of the reed. The warp, on its beam or beams, along with the harness and reed, is placed in the loom, the harness frames secured by the collets or strapping, and the reed properly fastened in the lay of the loom. In the subsequent weaving the proper shedding of the different portions of the warp for the inserting of each pick of filling is brought about by lifting and lowering the harness shades in a predetermined manner, the use of the harness thus being manifest.

Twine harness when spread on the shafts is frequently equipped for use in the automatic warp-drawing machine. In this case, the eyes or healds are individually separated and held in the proper position by means of special spiral springs, which can be brought down near the center of the healds, when the shades are placed in the machine along with the reed; upon adjustment, the machine can be started and a selecting needle will draw each warp thread separately through the proper dent in the reed, as well as the proper eye of the harness.

Many manufacturers of twine harness are equipped for turning out loom twine harness adapted for use in the automatic warp-drawing machine at a minimum cost, much less than would be the case at the loom drawing plant. Web drawing or the drawing of the warp threads through the harness eyes and reed dents, is a tedious process when done by hand, a process now done by an automatic machine [illegible] the work of tying the ends of a new warp to the running ends of the old, and pulling the new ends through the harness and reed.

A [illegible] a mechanism for the separation of two sets of threads, [illegible] and the other, the [illegible] angles to the warp. These

threads in the fabric interweave with each other, according to design. The original, primitive manner of accomplishing this was by the tedious process of threading the filling through the warp by means of a needle. The earliest harness of record consisted of a series of twine loops, each passing around one warp thread and all fastened to a rod, the number of loops to the rod and the number of rods with loops depending upon the plan and the compass of the weave. In weaving, the proper shed was developed by drawing the proper rod, or rods, in advance of the remaining ones, the rods being moved by hand. The next improvement was the linking of a similar series of loops with those previously described, passing each around a second rod, and fixing all loops in properly spaced positions, or spread, on the rods. The modern twine harness is constructed on this principle. It will be noted from the above that the demand for harness began with the inception of weaving.

THE DOMESTIC INDUSTRY

History.—The domestic manufacture of twine harness, on a commercial scale, began over three-quarters of a century ago, with the domestic weaving industry, and has kept pace with the development and improvement of the modern loom. Loom harness is produced in plants equipped with modern automatic machinery. Since many plants manufacturing loom harness also make loom reeds, both reeds and harness can usually be purchased from the same manufacturer.

Geographical distribution.—A leading textile directory lists loom harness manufacturing plants as follows: New Jersey, 13; Massachusetts, 4; New York, 4; Rhode Island, 4; Pennsylvania, 3; South Carolina, 2; Maine, 1; North Carolina, 1. Although a greater number of establishments are found in New Jersey than in any other State the capital invested is proportionately less than in some other States. For instance, the capital of one large plant in another State almost equals the combined capital of the New Jersey plants. But a large portion of the silk-weaving industry is located in New Jersey, and the majority of the loom harness manufacturers there produce a twine harness of a very fine quality for silk weaving and of a style different from that used in the weaving of ordinary cotton fabrics.

Organization and equipment statistics are not available.

Materials used and methods of production.—Loom harness, in the past, has been made of worsted, linen, silk, and cotton, but at present it is made chiefly of cotton. While it is estimated that fully two-thirds of the domestic looms are equipped with twine harness of cotton, the harness in use is generally of two types. The greater portion used is for the weaving of cotton fabrics, and is made from twines cabled or twisted from cotton yarns ranging from 20s to 78s. One large manufacturer estimates that from 300,000 to 400,000 pounds of domestic twine are consumed annually. In the weaving of silk, a twine harness of great fineness and strength is required, and while a considerable portion of this fine harness is imported, a satisfactory type is produced in the domestic industry from 70s to 100s twelve-ply cotton yarns. The combed Egyptian cotton yarns and the finest cabled cotton twines for the manufacture of such fine harness are generally imported, ranging from 98s twelve-ply to 150s nine-ply; for some purposes twines as high as 200s nine-ply have been imported. Imports of these fine harness twines have ranged

from 25,000 to 60,000 pounds annually. A small proportion of the finest imported is polished, it being held that the polishing of the twine adds to the life of the harness. In the manufacture of the finer harness cotton twine, England practically has a monopoly, as in the case of the finest yarns for labels and other fine weaves.

In the common domestic twine harness for use in fly shuttle looms, the heald consists of a strand of twine dropping down the required distance from the upper shaft, doubling back and looped to form the "eye" or opening of the required size, then returning to the top shaft, and there being knitted to the previous strand and looping over the shaft, again dropping to the center of the shade, again forming an "eye," the cycle being repeated for the forming of each "eye." From the bottom shaft an end of twine arises, going through the bottom of the "eye," and drops again to the bottom shaft, looping around it, and again rising to engage the next "eye," the operation being repeated for each "eye" as made. The twine healds, being strung and spaced on the shafts, are stretched tight and varnished at and near the eyes and for a distance each way with successive coats of a special varnish, each coat being allowed to dry thoroughly before the application of the next. After each coat, the healds are brushed and whipped to prevent any from adhering together. The varnishing of the twine is for the purpose of producing a protective wearing surface, prolonging the life of the harness in use, and preventing the chafing of the warp yarn in weaving. Harness of this type goes to the consumer already spaced on the shafts, which may vary from 12 to 14 inches apart, the shafts containing also the necessary screw-eyes properly attached, the harness being complete and ready for the web-drawing process. When harness is to be adapted for use in the automatic web-drawing machine, the necessary separating springs and rods are generally supplied and attached by the manufacturer, who is equipped for doing this at a minimum cost.

In Jacquard weaving, the "eyes" in the cords are made of brass, bronze, or glass and, as already noted, are called "mails."

In the domestic manufacture of fine twine harness for the ribbon and silk weaving trade, a type of construction is employed in which four strands of twine are required to accommodate each end of the warp. Although containing double the number of strands of twine in the imported article, it is manufactured comparatively cheaply, because the method is simply one of looping, without any braiding or knitting.

Collets may be made by braiding or twisting fine cabled cotton yarns.

Production and consumption figures are not tabulated in the statistics for loom harness, healds, and collets. As the annual imports for consumption have averaged a little over $9,000, and consist mainly of the finest types of healds for ribbon and certain types of silk weaving, it is evident that the domestic industry practically supplies the domestic demand for loom harness of the standard type used in weaving on fly-shuttle looms. The domestic product is practically consumed in this country.

EXPORTS

Exports of loom harness, healds, and collets are not separately recorded.

IMPORTS

Table 20, covering the period from July 25, 1897, to December 31, 1924, shows the imports for consumption of loom harness or healds under the act of 1897, of loom harness, healds, or collets, under the acts of 1909 and 1913, and of loom harness, healds, and collets, under the act of 1922.

Imports consist largely of the finest healds for the ribbon and silk industry, and are generally from France, and at times from Switzerland.

TABLE 20.—*Loom harness, healds, and collets, of cotton (or other vegetable fiber)—Imports for consumption—Revenue, 1898–1924*

Year	Rates of duty	Quantity	Value	Duty collected	Unit value	Actual and computed ad valorem rate
		Pounds				*Per cent*
Fiscal:						
1898[1]	50 cents per pound and 25 per cent.	2,908	$8,481	$3,574	$2.92	42.14
1899	do	2,924	8,299	3,537	2.84	42.62
1900	do	2,740	6,937	3,104	2.53	44.75
1901	do	1,894	4,974	2,190	2.62	44.03
1902	do	1,730	4,612	2,018	2.67	43.76
1903	do	1,834	4,852	2,130	2.65	43.90
1904	do	3,893	9,319	4,276	2.39	45.88
1905	do	6,140	10,525	5,701	1.71	54.17
1906	do	3,097	7,766	3,490	2.51	44.94
1907	do	3,567	9,507	4,160	2.67	43.65
1908	do	2,465	5,847	2,694	2.37	46.07
1909	do	6,289	14,612	6,797	2.32	46.52
1910	do	5,021	9,708	4,938	1.93	50.86
1911	do	6,005	11,177	5,797	1.86	51.86
1912	do	5,492	11,233	5,554	2.05	49.44
1913	do	5,678	11,719	5,769	2.06	49.23
1914[2]	do	635	1,243	628	1.96	50.54
1914[3]	25 per cent	6,454	6,509	1,627	1.01	25.00
1915	do	3,127	3,721	930	1.19	25.00
1916	do	1,842	3,744	936	2.03	25.00
1917	do	3,452	6,618	1,654	1.92	25.00
1918	do	2,204	4,288	1,072	1.95	25.00
Calendar:						
1918[4]	do	3,760	8,940	2,235	2.38	25.00
1919[5]	do	3,878	16,193	4,048	4.18	25.00
1920[6]	do	9,804	12,188	3,047	1.24	25.00
1921[6]	do[6]	6,711	13,812	3,493	2.06	25.29
1922[6]	do[7]	4,472	10,988	2,829	2.46	25.75
Annual average[8]		4,290	9,047	3,508	2.11	38.78
1922[9]	25 cents per pound and 25 per cent.	4,124	7,527	2,912	1.82	38.70
1923	do	4,485	11,868	4,088	2.64	34.45
1924[10]	do	2,440	6,435	2,219	2.64	34.48

[1] From July 25, 1897, to June 30, 1898, inclusive. Imports not recorded prior to act of 1897.
[2] From July 1 to Oct. 3, 1913, inclusive.
[3] From Oct. 4, 1913, to June 30, 1914, inclusive.
[4] July 1 to Dec. 31, 1918, inclusive.
[5] Includes 6,142 pounds, valued at $11,698, dutiable at 25 per cent ad valorem, and 569 pounds, valued at $2,114, dutiable at 25 per cent ad valorem and 7 cents a pound.
[6] Jan. 1 to Sept. 21, 1922, inclusive.
[7] Includes 3,305 pounds, valued at $3,859, dutiable at 25 per cent ad valorem, and 1,167 pounds, valued at $7,129, dutiable at 25 per cent ad valorem and 7 cents a pound.
[8] For 9,189 days, equivalent to 25.18 years.
[9] Sept. 22 to Dec. 31, inclusive.
[10] Preliminary figures.

COMPETITIVE CONDITIONS

The domestic manufacture of twine harness is confined largely to products of the standard type made of domestic twines of medium yarns and used in the general run of weaving in fly-shuttle looms. It is delivered to the consumer in condition for the process of web

drawing. The domestic demand for this type has hitherto been fully supplied by the domestic industry. Although there have been no competitive imports, it was reported that in 1923 a large manufacturer of cotton print-cloths imported 1,500 full sets of standard twine harness of this type from England, at a landed price, including duty, 30 per cent below the selling price of the domestic article. Imported harness of this type would land in the form of bundles of twine healds, the healds being knitted together at the end in the process of manufacture, and the additional expense of the necessary shafts, of stringing and spacing the healds thereon, and of the screw-eyes would fall upon the importing consumer, tending to offset to some extent the alleged difference in price. With this reported exception, imports of twine harness have consisted almost wholly of fine cabled and braided twine healds, in bundles, mainly for use on silk ribbon looms and in the weaving of skein-dyed broad silks, and have been of French or Swiss origin.

The largest imports of healds of this type come from France in bundles of 50,000 each. They vary from 15 to 17 inches in length, and are made of two strands each, of fine twine braided or knitted to form the openings for the eyes and loops; some of the healds are supplied with two "eyes" or "mails" for double-deck weaving. Imported healds of this type compete in the domestic ribbon and broad-silk weaving trade with the fine domestic healds previously described; and although the domestic type, owing to its construction, requires about twice as much material per end of warp as that used in the fine imported healds, the price of the domestic article is still on a competitive basis with that of the imported type, this being due to the smaller amount of labor and time required in its production. The domestic manufacturer has a further advantage when prompt deliveries of fine healds are demanded. He is, however, at a disadvantage in the matter of raw materials, as he is obliged to import his finest twines from England at landed prices that necessarily include the duties provided for fine yarns. There is no fine domestic harness in which the healds are formed in the same manner as in the competing imports.

Various types of Jacquard healds are also imported; these are equipped with brass, bronze, or glass "mails." They are generally imported in two sizes, 7 and 7 inches, or 7 and 9 inches, as to top and bottom spacings. The Jacquard healds are of a very fine cotton or linen yarn, plied but not cabled, and glazed. Healds for Jacquard weaving are imported from France.

There are no imports of fine harness from England. Some fine healds come from Switzerland, but a large domestic dealer asserts that their price is likely to be higher than that of the French makes, on account of differences in labor costs.

Imported Jacquard healds are generally from Lyons, and fine healds from St. Etienne, France. It is held in the trade that collets can not at present be imported at a profit.

Metal heddles are not included in paragraph 913 of the tariff act of 1922, being provided for in paragraph 316; yet, owing to the fact that at times such heddles supplant loom harness and healds of twine, it is of significance that such metal heddles are imported in competition with heddles of domestic manufacture.

TARIFF HISTORY

Imports of loom harness or healds, made of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value, were provided for in paragraph 320 of the act of 1897, at a compound duty of 50 cents per pound and 25 per cent ad valorem, but collets were not specially mentioned. In paragraph 330 of the act of 1909, imports of loom harness, healds, or collets, made of cotton or other vegetable fiber, were provided for at a compound duty of 50 cents per pound and 25 per cent ad valorem; and in paragraph 262 of the act of 1913 at 25 per cent ad valorem. In paragraph 913 of the present law (act of 1922) imports of loom harness, healds, and collets, made wholly or in chief of cotton or other vegetable fiber, are made dutiable at 25 cents per pound and 25 per cent ad valorem.

FOREIGN PRODUCTION

No statistics are available for foreign production of loom harness, healds, and collets.

PRICE DATA

Standard cotton twine harness is generally purchased in the domestic market complete, ready for web-drawing and hanging-up in the loom. The price per set of such harness depends upon the material, size, and type of twine used, the number of eyes per shade and their spread, the depth of the shade, the number of shades per set, the size of the wooden shafts, and the number of screw-eyes. Such harness is also frequently adapted for use in automatic warp-drawing machines by the addition of heald-separating and spacing spiral springs and rods, this generally being done by the manufacturer, at a small advance in price, and much below the corresponding cost of the same work if done at the weaving mill. Harness, so completed, is shipped in crates to the consumer. In the domestic market, standard price lists adopted by the trade are available for harness of different types, and competitive net prices quoted by manufacturers are practically identical. The price per set of domestic standard harness is made up of the price of the shafts, the screw-eyes in the shafts, and the total healds or harness eyes in the set, the price of the harness eyes being affected to some extent by the number per inch, as well as by the size and type of twine used.

CONCLUSIONS

Owing to dissimilarity in the details and methods of construction of the domestic article and of the imported types, as outlined, comparative costs per pound would be of no value. Under present conditions the fine healds from France and Switzerland, previously described, are imported for use in certain branches of the weaving industry, in competition with domestic products adapted to the same purpose. The reported import in 1923 of 1,500 sets of standard twine harness for common cotton weaving may indicate the possibility of imports of this type competing with comparable domestic products.

COURT AND TREASURY DECISIONS

There are no decisions of importance on loom harness, healds, and collets, wholly or in chief value of cotton or other vegetable fiber.

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IX. LABELS FOR GARMENTS OR OTHER ARTICLES

General Information

DESCRIPTION AND USES

Labels for garments or other articles, composed of cotton or other vegetable fiber, imports of which are provided for in paragraph 913 of the act of 1922, are assumed to be woven although not so specifically stated. The bulk of labels imported under this paragraph are woven on narrow-ware looms, and with fast edges.

Cotton woven labels are generally used on garments that are to be washed or laundered, manufacturers of such garments generally having their individual styles of labels, which serve as trade-marks for the identification and advertising of their products. In recent practice labels are also being attached to indentify cloths of established reputation from which some garments are made.

The lettering and figured designs in woven labels are produced in the process of weaving by the introduction of yarns of different colors, the ground weave being usually of bleached yarns.

THE DOMESTIC INDUSTRY

History.—The manufacture of woven labels for garments originated in England but imports now come largely from the Barmen district in Germany. The highly successful domestic weaving of labels is due to the perfection of the domestic ribbon loom with the Jacquard head, including all necessary modern equipment; also to the technical experience of the executives of the industry, many of whom learned its details in the Barmen district. The largest domestic plant was established in 1888 and incorporated in 1896. Labels were first specifically mentioned in the act of 1897.

Geographical distribution.—Statistics are not available as to the manufacturing of labels for garments as a separate or distinct industry. One of the leading textile directories lists label-weaving plants as follows: Nine in New Jersey, 4 in New York, and 1 each in California, Connecticut, and Pennsylvania; one of the domestic companies also controls a plant in Ontario.

Organization and equipment figures as to plants engaged primarily in the weaving of labels are not separately shown in the Census of Manufactures, but are included in the statistical data of the smallwares industry. Although the textile directory lists 16 plants, other large plants engaged in the manufacture of small wares are also equipped for the weaving of labels, especially those of medium weaves and grades, and the development of the industry has doubtless advanced greatly beyond the above figures. In the Senate Finance Committee hearings on the tariff bill, in 1922, it was stated that the total investment in the industry amounted to $8,000,000; that there were in operation between 1,200 and 1,500 looms; and that the annual pay roll totaled $1,500,000 for approximately 1,000 employees.

Materials used.—Cotton woven labels are made from cotton yarns, the ground of the labels being usually woven of bleached warp and filling. The ground weave is generally plain, the lettering and figures being developed in the process of weaving with the addi-

tion of fast-dyed yarns of different colors and shades. While labels of coarse and medium texture can be successfully woven from medium yarns, fine texture requires fine yarns, and labels of the finest texture and detailed designs call for finest yarns. In fine labels the warp yarns may range from 100s two-ply to 200s two-ply, mule spun, gassed, bleached, and prepared. In the selvages, warp yarns are at times used that average 80s two-ply. The filling yarn in the ground weave is generally 70s single. About 60 per cent of the labels contain red yarns, and these are generally of the Turkey-red dyed type, and about 60s two-ply. Approximately 20 per cent contain black yarns, Nos. 50s to 60s, and the remaining 20 per cent yarns of other colors. One of the largest manufacturers of fine labels imports his bleached fine yarns from England, and his fast-dyed yarns from Germany. The very fine yarns, mule spun, gassed, bleached, and prepared, are not made in the United States; and the fast-dyed yarns are imported on account of the demand for dyes that will withstand the abuse of the laundry, alkalis, and perspiration, and remain fast to light and not bleed in boiling. The filling yarns are generally regular ring-spun twist in the original.

It is stated in the trade that domestic 60s two-ply yarn can be mercerized and dyed by local job dyers, who will furnish a fast dye against bleaching and bleeding, but which will be uncertain against alkalis. It is now possible, however, to obtain domestic fast-black dyed cotton yarns in medium numbers that will meet all the requirements for a label. Of the labels used in shirts of a certain popular and standard brand, those containing fast-black yarns are of domestic manufacture and contain domestic yarns exclusively. For the very fine yarns domestic gassing and bleaching are said to be unsatisfactory; although coarse and medium domestic yarns can be had of satisfactory bleach and finish, yet in the very fine numbers, if the bleach is sufficient, the yarn is so tendered that it will not stand the subsequent scouring processes.

Mercerized cotton yarns are also used, in fact, yarns mercerized before dyeing, are sometimes the more economical. (See Section I, under the head, Bleaching, dyeing, and finishing.)

Methods of production.—The subjects of yarn preparation, the narrow fabric loom, bleaching, dyeing, and finishing have been treated in detail in Section I—Fabrics with fast edges not exceeding 12 inches in width and articles made therefrom.

Most label-weaving plants purchase all yarns ready bleached or dyed, and merely perform the necessary operations of winding, warping, quilling, and web-drawing, preparatory to hanging-up the looms. The labels are woven with fast edges on narrow-ware looms, provided with Jacquard heads, and with from four to six banks of shuttles for varying the filling in each weaving space; the shuttle of each bank contains a separate filling, the shuttle being changed, according to the weaving design, while the loom is in operation.

The entire lettering and figured designs are completed in each unit or label, each complete repeat constituting one label, the repeats continuing as the loom operates, and the narrow fabric as produced being wound up as a ribbon. The line of separation for the cutting apart of the labels is indicated in the process of weaving by the proper change of filling on predetermined picks. The completed fabric is shipped in rolls to the consumer.

Production and consumption.—The production of cotton woven labels is not shown separately in the census statistics. While imports are shown separately, there are no recorded exports, and accurate deductions as to production and consumption are not possible. The annual value of the total products of one of the largest domestic plants exceeds $1,000,000.

EXPORTS

As exports of labels are not recorded, and as Canadian statistics show no imports from the United States, it is possible that the total domestic production, as well as the imports for consumption, is consumed in this country.

IMPORTS

Table 21 shows imports of labels for garments or other articles, composed of cotton or other vegetable fibre, for the period from July 25, 1897, to December 31, 1924, inclusive.

TABLE 21.—*Labels for garments or other articles composed of cotton (or other vegetable fiber)*[1]*—Imports for consumption—Revenue, 1898–1924*

Year	Rate of duty	Quantity	Value	Duty collected	Unit value	Actual and computed ad valorem rate
Fiscal:		*Pounds*				*Per cent*
1898[2]	50 certs per pound and 30 per cent.	6,123	$21,463	$9,500	$3.50	44.26
1899	do	7,481	25,023	11,247	3.35	44.95
1900	do	11,375	36,239	16,559	3.19	45.69
1901	do	9,147	28,666	13,173	3.14	45.98
1902	do	9,520	33,142	14,702	3.48	44.42
1903	do	16,985	55,384	25,108	3.26	45.33
1904	do	12,934	41,306	18,859	3.19	45.65
1905	do	13,991	47,822	21,342	3.42	44.63
1906	do	18,233	52,835	24,967	2.90	47.25
1907	do	19,587	56,027	26,601	2.86	47.48
1908	do	16,646	42,863	21,182	2.57	49.42
1909	do	8,172	22,656	10,883	2.77	48.03
1910	do	12,619	33,886	16,475	2.69	48.62
1911	do	4,906	17,585	7,729	3.58	43.95
1912	do	8,407	13,980	5,897	4.10	42.18
1913	do	4,285	13,758	6,270	3.21	45.57
1914	do	944	2,853	1,328	3.02	46.55
1914	25 per cent		23,378	5,844		25.00
1915	do		15,292	3,823		25.00
1916	do		2,787	697		25.00
1917	do		8,736	2,184		25.00
1918	do		8,278	2,069		25.00
alendar:						
1918[3]	do		5,477	1,369		25.00
1919	do		5,831	1,458		25.00
1920	do		35,466	8,866		25.00
1921	do.[4]	(5)	38,304	10,020		26.16
1922[6]	do.[4]	(7)	126,305	32,927		26.07
Annual average[8]			32,338	12,751		39.38
1922[9]	50 per cent	12,406	30,488	15,244	2.46	50.00
1923	do	64,104	218,295	109,148	3.40	50.00
1924[10]	do	42,810	139,970	69,985	3.27	50.00

[1] Imports were not recorded separately prior to act of 1897.
[2] From July 25, 1897, to June 30, 1898, inclusive.
[3] From July 1 to Dec. 31, 1918.
[4] Plus 7 cents a pound if containing cotton having staple of 1⅜ inches or more, under emergency tariff act of May 27, 1921.
[5] Includes imports (weight not stated) valued at $14,486, dutiable at 25 per cent ad valorem, and 6,339 pounds, valued at $23,818, dutiable at 25 per cent ad valorem and 7 cents a pound.
[6] From Jan. 1 to Sept. 21, 1922, inclusive.
[7] Includes imports (weight not stated) valued at $14,300 dutiable at 25 per cent ad valorem, and 19,291 pounds, valued at $112,005, dutiable at 25 per cent ad valorem and 7 cents a pound.
[8] Annual average per year of 365 days for period covering 3 tariff acts from July 25, 1897, to Sept. 21, 1922. As this period included 9,189 days equivalent to 25.18 years, the annual average was obtained by dividing total by 25.18.
[9] From Sept. 22 to Dec. 31, inclusive.
[10] Preliminary figures.

Throughout the period covered by the acts of 1897 and 1909, imports were greatest upon the basis of value in 1907, amounting to 19,587 pounds, valued at $56,027. Subsequent to the peak of 1907, however, the values of annual imports show a decrease, falling to $13,758 in 1913. The increase in 1914 may have been due partly to the reduction in duty under the act of 1913.

The great bulk of imports having been from Germany in the past, the effect of the war is readily seen in the statistics for the five years ending with 1919. During this period of the war the change brought about in the domestic demand, owing to the fact that so many people were in uniform, admitted of the domestic demand being supplied by the domestic industry, with the addition of small imports, some of which were from England. The years 1920 and 1921 show decided increases, imports amounting to $35,466 and $38,304 respectively.

The greatly increased imports from January 1 to September 21, 1922, inclusive, were not due to any great extent to the anticipation of the higher duties, since the imports for the remainder of the year under the act of 1922 were almost of a proportionate value, and the total imports for 1922 were greatly exceeded by those for 1923, amounting to $218,295. Preliminary figures for 1924 show a considerable decrease.

Labels for garments are consumed by the manufacturers of garments, who dictate their designs and specifications and place orders for their supplies on the basis of competitive bids submitted by both domestic manufacturers and importers. Labels are not stock articles of unrestricted trade, as the designs in many cases are copyrighted. For this reason importers and domestic producers can not accumulate products in anticipation of prospective demand.

Although the country of origin is not shown in the statistics of imports, it is known that imports of cotton woven labels for garments are largely from the Barmen and Crefeld districts of Germany. Smaller amounts are supplied by England.

The upward trend of the value of imports beginning with 1920 was due partly to relatively prosperous conditions in this country, but more largely to the competitive advantage which importers enjoyed by reason of the depreciated and declining German exchange and the consequent low importing values. The table of imports shows foreign values.

Imports of labels under paragraph 913 of the act of 1922 are in chief value of cotton, generally of a plain weave for the ground, and of bleached yarns; and the designs, letters, figures, etc., are woven in, of fast-dyed yarns of cotton, although some also contain dyed yarns of artificial silk.

COMPETITIVE CONDITIONS

The manufacture of cotton woven labels, begun first in England, has developed to a well-established industry in Germany, where the art of weaving on narrow-ware looms with all modern attachments and equipment has been brought to a state of efficiency and perfection that may hardly be surpassed by the domestic industry. The lower wage scale in Germany is a competitive factor. Although orders on a quantity basis are greatly preferred, the ability and willingness of the German manufacturer to accept orders for small

lots is another factor in his favor. Germany also enjoys the competitive advantage of cheaper fast dyes of the types demanded in labels.

While some labels of medium texture may be produced satisfactorily from medium-fine domestic yarns, the bulk of the fine types calls for fine mule-spun yarns, 100s to 200s, two-ply, gassed bleached, and prepared; these are not produced by domestic manufacturers, but are imported from England. The rate of duty on imports of such yarns above 80s amounts to 30 per cent ad valorem, or 34 per cent ad valorem if vat-dyed, and the domestic label manufacturer who is compelled to import such fine yarns as his raw material necessarily pays the duty on them. As previously stated, the German manufacturer does not spin such fine yarns, and therefore also has to import them from England; but in weaving them into labels, and subsequently exporting his product to the United States, he enjoys the competitive advantage of immunity from duty on his yarns inasmuch as the German duty on imported yarns, which is lower than the American, is remitted when the labels are exported. It may be noted that, while under the present law imports of labels are dutiable at 50 per cent ad valorem, the comparable domestic product, made from the fine imported yarns, is not protected to that extent in competition with imports.

Prior to the stabilization of the mark on a gold basis in the fall of 1923, the German manufacturer also had the competitive advantage of his deflated currency in international trade.

The matter of freight hardly enters the question of competitive conditions, since the weight of 1,000 labels of average width and texture amounts to less than one pound.

Owing to unsettled conditions in the Ruhr Valley and adjacent territory in Germany, and the resulting delays in transportation, the domestic manufacturer has enjoyed an advantage in competing for orders wherein prompt and complete deliveries are demanded, domestic consumers at times cancelling their orders placed with importers, and at other times refusing to give repeat orders. But in large periodic or renewal orders, calling for uniform deliveries of an article constantly required by a large domestic garment manufacturer, maintaining a constant supply on hand, the German manufacturer has had all the advantages of lower wages and cheaper materials.

It is stated by a large consumer that the particular label which he uses, a standard make, woven with four colors, of a fine texture, is made abroad, and that on account of the four colors the imported article is more satisfactory; furthermore, that the landed price is 8¼ per cent below the price of the domestic competitive article. This label is purchased in large lots and for continuous consumption, and temporary delays in deliveries are not of serious consequence.

TARIFF HISTORY

Labels for garments were first specially mentioned in the act of 1897. Imports of labels for garments or other articles, composed of cotton or other vegetable fiber, were specially provided for at a compound duty of 50 cents per pound and 30 per cent ad valorem in the acts of 1897 and 1909, and at the rate of 25 per cent ad valorem

in the act of 1913. In the present law, act of 1922, the rate is 50 per cent ad valorem.

FOREIGN PRODUCTION

No recorded statistics are available as to the foreign production of labels for garments. Imports come from Germany, where, in the Barmen district, the weaving of labels has become a well established branch of the narrow-wares industry. Labels are also produced in England.

PRICE DATA

Sales of labels are generally made from samples, it being practically impossible to describe such goods by constructive specifications. For this reason there are no standard classifications upon which periodic quotations could be based. As previously stated, the item of freight, either on imports or on the domestic articles, is not an appreciable factor in the matter of competitive prices. For instance, one large domestic manufacturer ships a large proportion of his products by parcel post. In competing for orders, the quantity, deliveries, the number of different colored fast-dyed yarns, and the relative proportions in the sample label all enter the problem of price and margin of both the importer and the domestic manufacturer. Woven labels are the products of the narrow-ware or ribbon loom, each label constituting a complete design repeated over and over in the process of weaving, the fabric being woven into rolls, and sales of imports being generally reckoned on the price per 100 meters of the completed fabric. The length of one complete repeat for a particular label being known, the number of labels per 100 meters is readily ascertained; that being so, the price for competitive foreign and domestic bids can be based upon the label, using any arbitrary number, say 1,000, as a unit.

One firm of brokers reports its imports as averaging 36,000 meters per month, with prices ranging from $2.07 to $6.07 per hundred meters, based upon representative samples. These imports are for New York jobbers and come from Barmen.

One leading domestic consumer uses annually about 5,000,000 labels of a standard and well-established brand representing a very valuable trade-mark, woven with four fast colors and of very fine texture. He stated, in the spring of 1923:

> These labels made abroad cost us $4.80 per thousand as compared with the domestic quotation of $5.25. The reason why these labels of this character can not be made as well in this country as abroad is due to the fact that they are woven in four colors and as far as we know there are no four-color looms in this country that turn out as good labels as those made in foreign countries. Furthermore, the colors of the foreign make are far superior for reproducing our labels than domestic colors.

There is, however, no doubt that labels equally as good as any imported can be manufactured in this country from imported bleached and dyed yarns; but the higher cost of such yarns, landed duty paid, increases the difficulty of the domestic manufacturer in meeting the competition of imported labels.

Selling methods and margins also depend upon the conditions of the trade at any given time, whether it be a buyer's or a seller's market. Detailed information as to comparative prices of several

types of labels, imported from England and Germany and the domestic article, was given by a representative of the woven label manufacturers of the United States in a brief presented in the Finance Committee hearings on the tariff bill in 1922.

COST DATA

While many manufacturers purchase all yarns bleached or dyed, as the case may be, and simply prepare them for the loom, the manufacturing of labels in such cases being largely a matter of Jacquard designing, card cutting, yarn preparation, and weaving, yet other plants may be more fully developed with complete equipment for the bleaching, dyeing, and other manipulation of the yarns through all necessary processes. But plants are not standardized as to equipment and processes. Although one large plant may be fully equipped, owning its village, water power, steam, and electric plant, other label-weaving plants may consist simply of a few looms with the necessary yarn preparation equipment, and may be installed in rented buildings with leased power. For these reasons no comparisons as to first costs of mill and equipment in this country and abroad are feasible.

The materials used in the weaving of cotton labels consist mainly of cotton yarns, the finest types of yarns used being imported from England. Their comparative costs have been previously discussed under the head of materials, the effect of the duties on imported yarns being taken into account.

It is stated in the trade that in the manufacture of labels the item of labor usually constitutes over 40 per cent of the total cost of the product. No information is available as to overhead costs, which would vary with the organization, equipment, and size of the plant.

A very large and continuous consumer of a woven label containing fast black lettering of a simple design, for use in a high-class and popular shirt, purchases his labels from a domestic manufacturer who also controls a plant in England, but who at present supplies his customer from his domestic plant. On the other hand, a large constant consumer of a fine-texture label, woven with four fast colors, is able to secure his labels from Germany at a landed price 8½ per cent below the competing domestic article. These representative cases, in which the labels are bought and consumed in large amounts, and continuously, would appear to indicate to some extent the relative status of costs in Germany, England, and the United States.

COURT AND TREASURY DECISIONS

Under the act of 1890, cotton labels and shirt labels were held to be dutiable as manufactures of cotton and not as embroideries. (G. A. 2381, T. D. 14623 of 1893; G. A. 2530, T. D. 14847 of 1894.)

Labels, chief value of cotton, imported in strips, each strip containing several labels, were held dutiable under the provision for labels in paragraph 320, act of 1897. (G. A. 6271, T. D. 27053 of 1906, following T. D. 27009, 145 Fed. 622.)

Narrow woven strips of white cotton with single letters of the alphabet woven therein with colored threads at one-half inch intervals were likewise classified. (G. A. 4269, T. D. 20047 of 1898.)

Cotton strips about 2 inches wide, in which were woven, in silk, at intervals varying from 3 to 6 inches, the names of certain shoe companies, intended when cut to be attached to the tops of shoes, were held dutiable under the same provision. (*United States* v. *Herzog*, 145 Fed. 622, of 1905.)

Under the act of 1909 narrow strips of woven cotton fabric, black in color, about one-third of an inch in width, imported in running lengths and with cross-marks about 3 inches apart to indicate the points for cutting the strips into small pieces suitable for use as coat hangers, commercially fit for no other use, were held dutiable as manufactures of cotton at 45 per cent ad valorem under paragraph 332 of the act of 1909 rather than as cotton tapes at 60 per cent ad valorem under paragraph 349. (*United States* v. *Buss*, 5 Ct. Cust. Appls. 110 of 1914.)

Labels composed of cotton and silk, cotton component material of chief value, were held to be dutiable under the provision for "labels for garments or other articles" in paragraph 262 of the act of 1913 rather than as manufactures of cotton in paragraph 266. The Circuit Court of Appeals having decided that the provision of the tariff act of 1897 for "labels for garments or other articles, composed of cotton or other vegetable fiber" included labels composed of silk and cotton, cotton chief value (145 Fed. 622, *supra*), and the provision having been reenacted substantially in the act of 1909, and identically in the act of 1913, without substantial change of context, it must receive the same construction in the act of 1913, under the familiar rule that repeated enactments in identical terms of a tariff provision without substantial change of context, after the same has been judicially construed, will be accepted as legislative approval of the construction contained in that decision. (*United States* v. *Ascher*, 11 Ct. Cust. Appeals, 452 of 1923, followed in Abstract 45989 of 1923.)

X. BELTING FOR MACHINERY

Par. 913. * * * belting, for machinery, composed wholly or in chief value of cotton or other vegetable fiber, or cotton or other vegetable fiber and india rubber, 30 per centum ad valorem.

General Information

DESCRIPTION AND USES

Belting for machinery is a broad term, and the classification under the act of 1922, paragraph 913, includes belting composed wholly or in chief value of cotton or other vegetable fiber, and of cotton or other vegetable fiber and india rubber. Belting may be woven as simple or multiply fabric and of widths varying from the narrowest produced on narrow-ware looms to the widest and heaviest woven on fly-shuttle looms; it may consist of several plies of canvas or duck, folded and stitched and treated for use; it may be made of plies of heavy cotton fabric impregnated with rubber or balata gum, folded and stitched, and heavily calendered, and, in the case of rubber, subsequently vulcanized. These different types are all familiar to the trade and to the consumer.

Belting for machinery includes that used for the transmission of power as well as various types designed for conveying purposes. Imports of cotton transmission rope, for use in rope-drives, are also classed as belting for machinery, but comparable domestic products are classed as cotton rope. While a well designed and properly proportioned leather-belt drive will, under favorable conditions, generally prove the most efficient, especially when the belt is made endless, textile woven belts are coming more into favor. Where humid conditions are encountered, especially in the presence of steam vapors—conditions under which leather belts, even those constructed with water-proof cement, can not be used—textile belts impregnated with rubber are generally employed. For out-door drives, where belts are exposed to the weather, the rubber and balata are best suited. Balata belts are very satisfactory except under conditions of high temperature, as the gum begins to soften at about 120 degrees Fahrenheit. Both balata and rubber belts are efficient in pulley drives, owing to the high coefficient of friction. Special types of balata and rubber belts are manufactured for train-lighting purposes, the belts being installed under the coaches and driving the lighting dynamos from pulleys on the axles of the truck wheels. Special varieties of narrow-woven textile belting are treated and cut to lengths and sold as brake linings for automobiles.

A disadvantage of textile woven belts is the impossibility, for all practical purposes, of the consumer making them endless, it being necessary to employ belt fasteners of various types, or to resort to lacing. Both methods destroy the uniformity of the belt at the joint, and decrease its strength. A leather belt, on the other hand, can be taken up from time to time and made endless after each adjustment.

THE DOMESTIC INDUSTRY

History.—In 1891 the first products of the domestic rubber industry, in the line of hose, billiard cushions, and beltings, were placed on the market at Akron, Ohio, where manufacturing had been started on a small scale. Akron is now the rubber manufacturing center of the world. The manufacture of mechanical rubber goods began with that of hose and belting. The manufacture of rubber belting has also depended upon the development of the necessary fabrics employed in its construction. The same is true of balata belting, which is of more recent origin.

One of the largest domestic plants for the production of well-known brands of stitched duck and canvas belting was established in 1880. Another, in which textile woven belts of all kinds are produced, was established in 1834.

Geographical distribution.—Complete data showing the geographical distribution of plants engaged primarily in the manufacture of any of the types of belting embraced in the classification of paragraph 913 of the act of 1922 are not available. The Census of Manufactures for 1921 reported 31 establishments engaged primarily in the manufacture of belting and hose, made chiefly of cotton, linen, or canvas, distributed as follows: Five in Pennsylvania, 4 each in Massachusetts and New Jersey, 3 each in Indiana, Maryland, and New York, and 1 each in Colorado, Connecticut, Illinois, Michigan, Missouri, New Hampshire, Ohio, Rhode Island, and Virginia. Pennsylvania, the leading State, reported 34.7 per cent of the total value of products for the year.

In the same year 17 establishments reporting the manufacture of rubber belting and hose were located as follows: Five in New Jersey, 3 each in California and Illinois, 2 in Ohio, and 1 each in Delaware, Massachusetts, Minnesota, and New York. New Jersey, the leading State, reported 49.7 per cent of the total value of products.

Rubber belting was also reported in 1921 by establishments making rubber tires, tubes, and other rubber goods, located as follows: Ninety-six in Ohio, 64 in New Jersey, 52 in Massachusetts, 43 in New York, 37 in Pennsylvania, 26 in Illinois, 18 in Connecticut, 17 in Indiana, 15 in California, 11 in Missouri, 9 in Michigan, 7 each in Iowa, Rhode Island, and Wisconsin, 6 in Oklahoma, 4 each in Georgia, Minnesota, and Texas, 3 each in Colorado, Maryland, Nebraska, and Washington, 2 each in Kansas, North Carolina, Oregon, Virginia, and West Virginia, and 1 each in Delaware, Kentucky, Louisiana, and Utah. Ohio, the leading State, reported 50.6 per cent of the total value of products. Figures for the rubber industry in 1921 show that the total product of rubber belting amounted in value to $13,068,798, of which Ohio produced $4,130,403; New Jersey, $4,117,307; Massachusetts, $1,587,044; New York, $1,177,378; California, $828,800; and all other States, $1,227,866.

Textile woven belting for machinery is also made in cotton manufacturing plants engaged in the production of other lines of textiles; one of the largest plants in New England, making other goods, produced large quantities of woven belting, both on narrow-ware looms and on wide fly-shuttle looms.

Organization and equipment statistics for domestic plants engaged primarily in the manufacture of textile woven belting, canvas stitched belting, rubber and balata belting, are not available.

Materials used.—While belting for machinery may be composed wholly or in chief value of cotton or other vegetable fiber, or of cotton or other vegetable fiber and india rubber, the bulk of textile woven belting, from both the narrow-ware and fly-shuttle looms, as well as the canvas, duck, and twill used in the manufacture of the several types of belting previously described, are made of cotton yarns of various numbers and plies. Woven belting sometimes contains camels' hair yarns, woven in with the cotton yarns. Some canvas belts are impregnated with paints of linseed oil and metallic oxides, and some conveying belts of special types are saturated with paraffine wax.

Methods of production.—Woven belts of the narrower widths are produced on narrow-ware looms, and in the wider widths are woven on fly-shuttle looms. They are made of plied and twisted yarns, varying in both number and ply according to the purpose for which used. While the fabric may in some cases consist of a plain weave, the belts are usually of multiply weaves with a binding warp, the object being to construct a closely woven fabric of sufficient cross-section to withstand the tensile strains to which the belt is subjected when in operation and to develop a firm surface for contact with the pulley. The cotton and filling yarns used are generally of coarse and medium numbers and are prepared for the loom in regular processes. The looms, both of the narrow-ware and fly-shuttle types, are necessarily heavy and strong to resist the stresses arising in weaving such fabrics. The weave in this type may be either twill or plain, one manufacturer using a twill weave in belts up to 8 inches in width and a plain weave in the wider widths. Some of these belts are of double texture, the weave on one side being of camels' hair and the reverse surface of cotton.

Woven cotton belts are in some cases run through hot solutions of asphalt, pine pitch, or other ingredients for the purpose of preserving the surface, increasing the coefficient of friction, and rendering the belts water-proof.

In the manufacture of rubber belting, the cotton duck is impregnated with india-rubber gum, cut into widths according to requirements, folded into different plies and run between rollers, and, after being formed, subjected to pressure and vulcanized. Rubber belting is thus made in various widths and plies according to specifications. Belts so finished generally show on the surface the texture of the fabric, but some are also stitched through with longitudinal rows of machine stitching, given additional coats of rubber, and vulcanized, the fabric being thus completely covered and concealed. Balata belts are made of twill fabrics as well as of duck.

Belts are also made of canvas or duck, cut to desired widths, folded into plies, and stitched lengthwise with machine stitching; they are then treated with linseed oil products and the surface painted with mineral-oxide paints. Some belts of this type are treated to resist acid fumes and steam. Others, when completed, are saturated with paraffine wax, these being intended for conveyor belts for postal packages and other indoor conveying purposes, where cleanliness and sanitary conditions are of prime importance.

Some small cotton belts, particularly adapted to cone drives, are manufactured in the endless form, and subsequently vulcanized. One process of making small fabric endless belts is as follows: A double-cloth tubular-woven fabric, of a width equal to the length of the

required belt, is woven in a fly-shuttle loom. Two pieces of sufficient and equal length are taken, the edges of each piece turned in and folded, one piece being then inserted within the other, and the two pieces fastened together throughout their length with rows of stitching, thus forming a completed, endless belt. In this special type of belt, the filling threads of the original fabric constitute the ends running lengthwise of the completed belt, and this is taken into consideration in designing the tubular fabric for the purpose.

While many manufacturers of rubber, balata, and duck or canvas belting purchase the fabrics used, other large plants manufacture all the fabrics required.

Although in import statistics cotton transmission rope is classed as belting for machinery, in the domestic industry it is classed as cotton rope. Such rope is made in domestic cordage plants.

Production and consumption.—The domestic production of textile belting is not shown separately in census statistics, but in combination with hose, whose basic material is chiefly cotton, occasionally linen. The value of the combined products of these two articles amounted to $4,440,775 in 1914, $19,176,277 in 1919, and $6,390,498 in 1921. The apparent decrease from 1919 to 1921 was partly due to several important establishments having changed the character of their operations in 1921, being assigned to other classifications, such as "rubber belting and hose," "cotton goods," etc. Establishments assigned to other industrial classifications reported production of belting and hose, other than leather and rubber, to the value of $1,289,000 in 1914 and $1,168,000 in 1919. Corresponding figures for 1921 are not available, as they were not separately reported by the plants.

The production of rubber belting in establishments engaged primarily in the manufacture of rubber belting and hose amounted in value to $8,985,511 in 1919, and to $3,872,904 in 1921; in plants engaged in the manufacture of "tires, tubes, and other rubber goods," amounted to $13,450,000 in 1919 and to $9,087,000 in 1921.

For the rubber industry as a whole, the value of rubber belting in 1921 was $13,068,798. Preliminary figures for 1923, show a production valued at $24,266,881.

Domestic cotton transmission rope is classed as cotton rope, although imports of cotton transmission rope are classed as belting for machinery. Since the value of rubber belting products alone amounted to over $13,000,000 in 1921, while exports amounted to nearly $1,500,000, and imports of all kinds to only $232,169—mostly textile woven and transmission rope—it is evident that the domestic industry supplies practically the total domestic demand for rubber belting. The same statement practically applies to the domestic demand for other types of woven belting, imports of woven belting consisting generally of two specially woven types.

EXPORTS

Export statistics of cotton woven belting for machinery are not available. Exports of rubber belting were not separately listed previously to 1920, being included with those of "india rubber, belting, hose, and packing." The exports of this group totaled in value $2,605,551 in 1913, $4,525,243 in 1918, and $6,100,460 in 1919.

Exports of rubber belting to 75 countries totaled in value $3,532,277 in 1920, distributed as follows: British South Africa, $477,016; Mexico, $465,700; Canada, $270,939; Japan, $242,596; Chile, $239,927; Argentina, $200,337; Australia, $191,712; Cuba, $129,899; England, $98,721; Germany, $7,003; and the remainder to 65 other countries.

In 1921, exports of rubber belting to 68 countries, amounted in value to $1,446,063, distributed as follows: Mexico, $254,872; British South Africa, $214,893; Peru, $103,049; Canada, $84,358; British India, $64,014; Argentina, $54,709; England, $40,020; Germany, $3,077. The remainder went to 60 other countries.

In 1922, rubber belting to the value of $1,269,999, was exported to 77 countries as follows: British South Africa, $261,708; Mexico, $178,622; Canada, $122,672; Brazil, $81,545; Chile $61,094; France, $49,212; Argentina, $45,154; Australia, $44,283; England, $32,989; and the remaining $392,720 to 68 other countries.

Exports of rubber belting in 1924 amounted $2,089,056. Detailed statistics are not yet available.

IMPORTS

Imports of belting for machinery made of cotton or other vegetable fiber and india rubber were first specially provided for in the act of 1909. Table 22 shows imports for consumption of belting for machinery of cotton or other vegetable fiber and india rubber, from August 6, 1909, to December 31, 1924, inclusive.

TABLE 22.—*Belting, for machinery, of cotton (or other vegetable fiber)—Imports for consumption—Revenue, 1910–1924*

Year	Rate of duty	Quantity	Value	Duty collected	Unit value	Actual and computed ad valorem rate
Fiscal:		*Yards*				*Per cent*
1910 [1]	30 per cent ad valorem		$506,217	$151,865		30.00
1911	do		475,724	142,717		30.00
1912	do		173,185	51,955		30.00
1913	do		224,821	67,446		30.00
1914 [2]	do		63,908	19,172		30.00
1914 [3]	15 per cent ad valorem		248,451	37,268		15.00
1915	do		206,868	31,030		15.00
1916	do		286,518	42,978		15.00
1917	do		365,838	54,876		15.00
Calendar:						
1918	do		578,920	86,838		15.00
1918 [4]	do	323,801	353,114	52,967	$1.09	15.00
1919	do	516,286	550,970	82,645	1.07	15.00
1920	do	789,833	804,353	120,653	1.02	15.00
1921	do.[5]	[6] 407,643	232,169	34,843	.57	15.01
1922 [7]	do.[5]	355,365	265,189	39,778	.75	15.00
Annual average [8]			406,200	77,417		19.06
		Pounds				
1922 [9]	30 per cent ad valorem	49,364	59,257	17,777	$1.20	30.00
1923	do	565,081	374,802	112,441	.66	30.00
1924 [10]	do	555,686	377,650	113,295	.68	30.00

[1] From Aug. 6, 1909 to June 30, 1910 inclusive. Imports not recorded separately prior to Act of 1909.
[2] From July 1, 1913, to Oct. 3, 1913, inclusive.
[3] From Oct. 4, 1913, to June 30, 1914, inclusive.
[4] From July 1, to Dec. 31, 1918, inclusive.
[5] Plus 7 cents a pound if containing cotton having staple of 1⅛ inches or more, under Emergency Tariff Act of May 27, 1921.
[6] Includes 406,129 yards (weight not stated), valued at $231,537, dutiable at 15 per cent ad valorem, and 246 pounds (1,514 yds.), valued at $632, dutiable at 15 per cent ad valorem and 7 cents a pound.
[7] From Jan. 1, to Sept. 21, 1922, inclusive.
[8] Period of 4,795 days (13,14 years) covered by acts of 1909 and 1913.
[9] From Sept. 22, to Dec. 31, inclusive.
[10] Preliminary figures.

It will be seen that imports decreased from 1910 to 1913, and, in spite of the lowered duty under the act of 1913, did not increase during the years 1914, 1915, and 1916. This was possibly due to the war, as imports increased immediately after its close, reaching the peak in 1920. They fell off greatly in 1921, owing to the general slump in business during the period of deflation, but have since increased and during the past three years have remained fairly steady.

Imports of belting are largely from England, and during the war were almost entirely from that source.

In addition to imports of textile woven belting for the transmission of power, and of cotton transmission rope, other classes of belting for machinery are reported. These include different types of conveyor belts, composed of fine multiply fabrics, manufactured endless, and used in textile printing machines for sustaining the "back greys" and the fabric to be printed. Some of these types are also waterproofed, for use in the printing of wall paper.

There are at present practically no imports of rubber or balata beltings.

COMPETITIVE CONDITIONS

Special types of carrier belts used in textile printing machines for supporting the fabric and the "back greys," including those that are waterproofed, are imported from England as belting for machinery; these do not compete with any domestic article, there being no comparable domestic products at the present time. Woven beltings for the transmission of power, some containing camels' hair, are imported from England, and compete with comparable domestic products. One English company, constantly shipping to its American representative, contemplates the establishment of a domestic plant; the domestic representative asserts that the company's imports can hardly compete successfully at present with similar domestic products, although, in the case of the type containing camels' hair, the domestic manufacturer purchases his camels' hair yarns from spinners who import their raw stock at landed prices which include the duty. Textile belting for machinery of various widths and textures is constantly imported, but domestic manufacturers who also card and spin their yarns are able to compete successfully, under present conditions, with similar imported products.

Cotton transmission rope of a special type, varying in size from three-eighths inch to 2 inches in diameter, is continuously imported by a large corporation engaged in the manufacture and sale of transmission equipment, the imports being classed as belting for machinery. This rope, of a patented construction, is made of three strands and without a core, and is said by its manufacturers to reduce internal friction to a minimum. It is sold direct to consumers, and the importers state that it does not compete with any domestic identical article. Highly satisfactory domestic cotton transmission rope of different sizes and numbers of strands, with and without cores, is, however, readily available in the domestic market.

The domestic manufacturer of rubber and balata belting is at present meeting with practically no competition from imports. This situation is probably due to the efficient organization of the domestic industry in all its branches, including its control of foreign sources

of supply of raw materials, the manufacture of the various textile fabrics used, and its highly developed sales organizations. The last-named factor embraces successful methods of securing both foreign and domestic trade, some of the large companies maintaining stocks and having representatives in many cities of the United States as well as in the larger foreign cities. Domestic rubber belting is exported to most foreign countries. The large domestic manufacturers of stitched canvas belting are able not only to meet competition from imports but to find foreign markets for their products. There are occasional imports of special belts ordered by domestic users of foreign-built machines. Except for a relatively small amount of imported camels' hair, used in a certain type of woven belt, all yarns, fabrics, and other materials are of domestic manufacture.

TARIFF HISTORY

Under the tariff acts of 1883, 1890, 1894, and 1897, cotton woven belting was not specifically mentioned, and imports were dutiable under the basket paragraphs of Schedule I at 35, 40, 35, and 45 per cent ad valorem respectively. The first specific mention of belting for machinery in the cotton schedule was in the act of 1909 (paragraph 330) which provided for imports of "belting for machinery made of cotton or other vegetable fiber and india rubber, or of which cotton or other vegetable fiber is the component material of chief value," at 30 per cent ad valorem. The same wording was used in the act of 1913 (paragraph 262) but the rate was reduced to 15 per cent ad valorem. The act of 1922 (paragraph 913) provides for imports of "belting, for machinery, composed wholly or in chief value of cotton or other vegetable fiber, or cotton or other vegetable fiber and india rubber" at 30 per cent ad valorem.

FOREIGN PRODUCTION

No statistics are available as to the production of belting for machinery in foreign countries.

PRICE DATA

The different types of beltings for machinery are priced by the linear foot, and the price varies with the ply, the width, the construction and the quality of the article. Price lists are prepared by the manufacturer for each type and for all widths made. These lists represent the base prices, and are quoted in naming the discounts for the net prices, which depend upon the quantity under consideration.

Comparative wholesale prices have been obtained for roll lots, f. o. b. in the domestic market, as of June 1, 1914, the peak price of 1919 or 1920, and a recent price as of June 1, 1923, for the following standard types of belting: Imported textile woven, domestic balata, domestic canvas-stitched, domestic textile, and domestic rubber, all 8 inches wide and of the capacity of a first quality pure oak-tanned double leather belt. These, together with the price of such leather belt, are shown on the following page.

Wholesale net prices per linear foot, f. o. b. New York City, of belting for machinery, 8 inches in width, equivalent in capacity to an 8-inch pure oak-tanned double leather belt of best quality

Type	June 1, 1914	Peak (1919–20)	June 1, 1923
Imported textile woven	$0.620	$1.728	$1.310
Domestic textile woven	.507	.812	.619
Domestic canvas stitched	.350	1.010	.580
Domestic balata	.756	1.200	1.080
Domestic rubber	.780	1.320	.930
Domestic leather	1.422	3.072	2.688

Some manufacturers of belting for machinery sell directly to consumers, while others sell only through jobbers or supply houses. In addition to the price discounts from the base list, trade discounts are also allowed for cash.

WAGE AND COST DATA

No statistics are available for wage or cost data in the manufacture of belting for machinery, at home or abroad, as no investigations have been made. In all types described, domestic manufacturers equipped for carding and spinning their yarns, who also weave their fabrics and are producing on a quantity basis, are able to manufacture with minimum costs of materials, labor, and overhead.

COURT AND TREASURY DECISIONS

Machinery belting composed of cotton and india rubber, india rubber chief value, classified at 35 per cent under paragraph 463 of the act of 1909 as manufactures of rubber not specially provided for, was held to be dutiable, as claimed, at 30 per cent under paragraph 330 as "belting for machinery made of cotton or other vegetable fiber and india rubber." The court held that there was no ambiguity in the statute, the merchandise in issue coming directly within the terms of paragraph 330. (*Nairn Linoleum Co.* v. *United States*, 4 Ct. Cust. Appeals, 394 of 1913.)

In the case of *United States* v. *Pitt* (3 Ct. Cust. Appeals, 91 of 1912) the Court of Customs Appeals held that there could be no distinction between power transmission belts which are woven flat and those which are twisted cords, and that both alike are entitled to classification as belting for machinery.

In a later case, decided under the act of 1913 (G. A. 8036, T. D. 37063 of 1917), the Board of General Appraisers held that merchandise consisting of endless pieces of cotton felt, used for making conveyor belts in paper-making machines, for carrying paper pulp over hot cylinders for the purpose of drying it, was properly dutiable as belting for machinery. Paragraph 262 was construed to include the following articles: Blankets for cotton-printing machinery (Abstract 37188 of 1915); cotton felt for making conveyor belts (G. A. 8036, T. D. 37063 of 1917) as belting for machinery.

XI. BRAIDS, OTHER THAN BARMEN LACE[1]

TARIFF ACT OF SEPTEMBER 21, 1922

Par. 1430. * * * braids, loom-woven and ornamented in the process of weaving, or made by hand, or on any braid machine, knitting machine, or lace machine; and all fabrics and articles composed in any part, however small, of any of the foregoing fabrics or articles; all the foregoing, finished or unfinished (except materials and articles provided for in paragraphs * * * 1404, 1406, and 1424 of this Act), by whatever name known, and to whatever use applied, and whether or not named, described, or provided for elsewhere in this act, when composed wholly or in chief value of yarns, threads, filaments, tinsel wire, lame, bullions, metal threads, beads, bugles, spangles, or products of cellulose provided for in paragraph 1213 of this act, 90 per centum ad valorem; * * *

SUMMARY

The art of braiding is probably older than that of weaving, and, like weaving, was first done by hand.

Braiding by hand has been carried on among most tribes and peoples. The distinctive difference between braiding and weaving is that, in braiding, the threads of one series are crossed lengthwise, passing alternately over and under each other, making a texture of warp threads only, while in weaving, two series of threads are used, of which, one, the filling, traverses the other, the warp, at right angles. While weaving is by far the more important, many narrow fabrics used for tying, or ornamentation, could not be woven, and for these, the process of braiding was invented.

Plaiting or braiding is practically the mechanical application of the principle followed by the dancers in the well-known Maypole dance, dating back to the middle ages.

While some articles (lacings and wickings, for instance) included in the small-wares paragraph may be braided, most cotton braids are covered by paragraph 1430 of the act of 1922, and consist of articles for trimming purposes. The most popular type, other than Barmen lace, in the domestic as well as in the imported lines is known as rick-rack, a pattern developed by braiding with varying thread tensions.

PRODUCTION

Domestic braids are generally produced in plants manufacturing other lines of small wares.

In 1919 the domestic production of cotton braids, embracing "flat braids, woven and knitted," "lace and braided lace," "round braids" (including shoe and corset laces), and "all other," amounted to 1,119,890,689 linear yards, totaling in value $19,317,624. Census figures for 1921 show a total production of cotton "braided products" amounting to 1,995,202,285 linear yards, weighing 10,112,922 pounds, with an aggregate value of $13,025,750. The 1923 production was valued at $14,659,205 (preliminary figures).

[1] The fancy lace-like braids commonly known as "Barmen lace" will be treated in a survey dealing with lace, net, etc. Ordinary braids, other than Barmen lace, are considered to be more in the nature of small wares and therefore more properly treated in connection with the data herein given for other small wares. It should be noted, however, that import and export statistics do not separate Barmen lace from other braids and that there will necessarily be some overlapping of the data on braids in the two surveys.

IMPORTS

Imports for consumption of cotton braids, loom-woven and ornamented in the process of weaving, or made by hand or on any braid, knitting, or lace machine, amounted in value to $168,194 in 1920; to $172,378 in 1921; and to $291,898 from January 1 to September 21, 1922, inclusive. The decided increase in this portion of 1922 was partly due to the anticipated higher rate of duty under the act of 1922. Imports for the remainder of 1922 amounted to $63,519, and for the year 1923 to $157,829. Of the total imports of braids of all kinds during the periods above mentioned, more than half, by value, was of artificial silk, cotton braids ranking second, and silk braids third. The total braids imported in 1923 amounted in value to $656,708, distributed as follows: Cotton, $157,829; flax, etc., $5,745; silk, $64,154; artificial silk, $409,114; and braids of metal threads or tinsel wire, $19,866. Preliminary figures for 1924 show braids to the value of $608,346, distributed as follows: Cotton, $115,142; flax, etc., $3,435; silk, $42,643; artificial silk and horse hair, $426,546; and metal thread or tinsel wire, $20,580.

COMPETITIVE CONDITIONS

While braids of many types are standard, staple articles, some are subject to the dictates of fashion, and the demand is at times uncertain. Under present conditions domestic manufacturers are able to compete with imports in certain lines, but can not generally export in competition with German manufacturers.

General Information

DESCRIPTION AND USES

Braids are well-known articles in the trade and are used extensively for binding, staying, trimming, and other purposes.

It was not until the middle of the eighteenth century that the braiding machine was patented, the first official mention of a machine for making braid being an English patent granted to Thomas Walford, in Manchester, in 1848; but at that date the braid industry was already firmly established in Barmen, Germany, which may be truly called the birthplace of the braid industry. Braids were manufactured there long before the introduction of steam power, and to this day Barmen has a firm hold on the industry, sending braids to all parts of the world.

The cotton small-wares classification includes many braided articles, such as cords, tubings, sleevings, lacings, etc., but cotton braids, both the imported and those produced in the domestic industry, are chiefly for decorative and trimming purposes, two principal types consisting of the well-known "rickrack" and "soutache" braids. The name soutache is of Hungarian origin, and such braids are the simplest made.

Rickrack is also largely used in needle craft and crocheting for making edgings, insertions, and fancy trimmings; in the production of lingerie, bureau, luncheon and porch sets, pillow covers, curtains, doilies, baby caps, aprons, and innumerable other articles wherein braids of various sizes and colors can be used to advantage. Sou-

tache braids are finding new and extended uses in the art of "knot work" for such decorative and useful articles as women's belts and girdles, pulls for lamps, curtains, shades, hand bags, etc.

THE DOMESTIC INDUSTRY

History.—In 1824 the plaiting or braiding machine was first introduced from Germany, and in the succeeding year the Jacquard machine was brought over. Gold laces and braids were made by power in Philadelphia several years before the attempt was made in Europe, and the use of power for the making of fringe may be said to have been first adopted in Philadelphia. In 1860 there were in Philadelphia seven establishments engaged in the manufacture of cotton webbings, tapes, and braids, with an aggregate capital of $158,000, and turning out an annual product valued at $265,000. In 1867 an establishment in Philadelphia, founded in 1824, operated 130 coach-lace power looms, 100 narrow-ware looms, and 400 plaiting or braiding machines, this firm having purchased in 1857 the entire business of a Massachusetts company which at the time was the largest manufacturer of coach lace in America.

The great development of the domestic braiding industry has taken place within the past 30 to 40 years, and its present high efficiency is largely due to the perfection of the braiding machine by domestic machinery manufacturers who gained their knowledge of braiding in Germany, where the industry has employed high-grade mechanical talent for generations past. The founders of one large domestic machine plant, having at their start in 1892 the advantage of thorough familiarity with the German industry and a well-grounded experience in the machinists' trade, have developed the braiding machine to the highest state of perfection in mechanical detail, workmanship, and efficiency. As this includes all modern equipment, the domestic braiding industry, supplied with the very latest and improved machines, is capable of meeting any competition as to designs, styles, and types of fabrics. One of the largest domestic plants manufacturing practically every kind of braid that can be produced on a braiding machine is of modern construction and equipped with up-to-date domestic machinery; and although completed only within recent years is now being doubled in capacity and should prove the best equipped plant in the industry, whether at home or abroad.

Geographical distribution, organization, and equipment of the braiding industry are not separately shown, but are included with those of the cotton small-wares industry. The Census of Manufactures showed a total of 62,630 braiding machines in use in 1919 in the manufacture of cotton small wares. Of these, 13,333 were in Massachusetts, 1,498 in New Jersey, 5,957 in New York, 12,256 in Pennsylvania, 27,275 in Rhode Island, and 2,311 in all other States. In this equipment, 1,672,081 bobbin carriers were employed, averaging 26.7 to the braiding machine.

Materials used.—In the manufacture of cotton braids, the cotton yarns used may be single or ply; unbleached, bleached, or dyed; plain or mercerized, polished or prepared. India rubber strands also are used in the construction of elastic braids.

Methods of production.—While in ordinary weaving there are two sets of threads, the warp and the filling, in simple braiding only one

set is used. In braiding there may be strands or threads of different materials, sizes, and colors and, in elastic braids, strands of india rubber are fed in during the braiding.

In the process of braiding, the threads or strands may be plaited together in many ways, so that each thread or strand plaits with every other one according to the pattern adopted.

Braids are made round, flat, or tubular, according to the number and predetermined routes of the bobbin carriers. The threads or strands making up the article are wound upon bobbins, either singly or in pairs, and the ends are all carried to the center of the machine, where the interlacing of the threads is completed in a suspended eye or "former"; from this, the finished braid is continuously drawn off, as produced, by a take-up motion, and deposited in a receiving can. Some braids are wound on reels as completed.

Many articles are made by braiding over cores of different materials. In this manner electric cords are covered with insulating materials, packing materials are developed, and braided hose is made. Sometimes in covering cords with more than one ply, two or more braiding units are used tandem, being combined in the one machine.

Preparatory and finishing processes.—The necessary preliminary processes for the yarns and materials are similar to those employed in the production of small wares, and the same data as to bleaching, dyeing, and finishing, will hold for both weaving and braiding. Braids are sized and calendered and put up for the trade in rolls or packages of stated lengths, and are matched by sample cards, showing widths and arbitrary stock numbers for identification. Braids may be steamed and embossed for certain purposes.

Machinery.—The braiding machine of domestic manufacture has been highly developed in various types, from the simplest for the plaiting of single cords, to the complex, equipped with Jacquard motions, for the making of Barmen laces and braids of complicated designs. Domestic braiding machines are equal to any that can be imported, in regard to capacity, efficiency and perfection, and to workmanship and materials.

The fundamental parts of the braiding machine are the two horizontal plates, preferably of steel, connected by stay bolts with an intervening space of about 4 inches, the lower plate acting as the bed plate of the machine, and carrying the studs or gear bolts on which horn gears revolve. The horn gears are double-flanged gear wheels, carrying notches or horns in the upper flange, and their object is to give the bobbin carriers the essential zigzag semiannular movements.

The strands of materials or threads composing the braid are wound on bobbins. The bobbin carriers are arranged in two series, one running from right to left, the other from left to right, crossing each other in their serpentine courses. The threads of one series are thus alternately laid over and under those of the other.

Guide grooves are provided in the top plate of the machine, corresponding nearly with the pitch line of the gears. The small inside plates, or quoits, are secured to the square shoulders of the gear bolts. The bobbin carriers move in the guide grooves, the carrier being provided below the top plate with a driver or pin which engages with the horns or notches of the gears below. By means of these pins, in contact with the horn gears, the carriers are moved

along through the guide grooves, the pin remaining in the horn of one gear until the point of crossing is reached, where it is transmitted to the next gear and carried along to the next crossing. At least two gears are necessary to produce a braid.

The most important part of the mechanism of all braiding machines is the carrier or spindle, upon which four duties devolve: To carry the bobbin on which the thread is wound; to provide a uniform tension in the thread; to let off the thread evenly; and to stop the machine when a thread runs out or breaks. In order to economize space, carriers for vertical bobbins are generally used; these are again divided into two classes, those with the thread-tension weights inside, and those with the tension weights outside the bobbins. The carrier having the tension weight inside the square stand on which the bobbin rests is the one generally used.

With all types of braiders the number of horns or notches in the gears must be at least double the number of the carriers, as each carrier must meet an empty horn in passing from one gear to the other.

Another important element of the machine is the take-off mechanism, equipped with changeable gears for varying the rate of take-up, according to the texture of the fabric to be produced.

Braiding machines are operated at various speeds, depending upon the type and capacity of the machine and the fabric to be made.

Machines for small braids, such as soutache, laces, etc., are generally built with two, three, four, or more units or heads on all plates. For driving purposes, braiders are generally grouped symmetrically, and operated from a shaft which may be either motor or belt-driven.

The character of the different braids produced is governed by the manner of arranging the horn gears, by the number of horns or notches, and by the distribution of the carriers on the available notches. There are four general classes of machines for the making of as many types of braids, as follows:

(1) Machines for making flat braids: These machines have a number of horn gears arranged in a circle. In the race-way above the horn gears each carrier is propelled from one horn gear to the other in semicircles until it arrives at the end gear, on which it makes a full revolution and returns to the last point of intersection, moving now in the opposite direction while being carried back to the starting point. With each new horn gear, the carrier crosses its former course and the thread carried by it is laid alternately over and under those of the carriers moving in the opposite direction. Between each two carriers there must be an empty horn, as otherwise the carriers would collide. At each point of intersection a carrier meets an empty horn on the next gear which enables it to move in between two carriers running in the opposite direction. For this reason the end gears have an uneven, and the middle gears an even number of horns; thus, at the end, each carrier is put back for the space of one horn in the rotation, and therefore always meets an empty horn at the points of intersection.

In order to produce a full even edge in the braid, the end gears always have more horns than the middle gears. Generally, the end gears are made with 5 horns and the middle gears with 4. This arrangement produces what is called plain braid.

If the middle gears have 6 and the end gears 7 horns, each thread will pass alternately under and over 3 opposite threads and the resulting braid is known as the "hercules." If the middle gears have 2 and the end gears 3 horns, the thread will pass under and over only one of the opposite threads, producing what is known as the "diamond" or "basket" pattern. In order to produce a braid of regular appearance, each thread should alternately lie over and under an equal number of crossing threads, which will always be the case if the middle gears all have the same number of horns and if there are an even number of gears.

The smallest number of gears that can be used on a braiding machine is two, in which case the end gears only are used. These gears must always have an uneven number of horns, and the braids produced on machines of this class are made with an uneven number of threads and are called "soutaches." These, the simplest braids that can be made, are used largely in passementeries and in dress and military trimmings; some are elastic, and others are made of cotton for candle wicking.

Braiders operating with large numbers of carriers are sometimes provided with beaters, consisting of combs with steel prongs swinging in and out in the plane of the braid former; the points of the prongs beat the threads into the braid and facilitate the forming of a tight and even fabric. On large machines the beater motions are highly developed and more complicated, and are extensively used where the tension on the threads is insufficient to force each deposited pick into place.

Where warp threads are to be used, the gear bolts are hollow and warp guides are provided and fastened to the threaded ends of the bolts, level with the tops of the carriers; arrangements for the warp spools are made under the frame.

In addition to the straight and plain braids a great many fancy braids are produced on flat braiding machines. Rickracks, wave braids, and braids of other patterns can be made by using tension weights of graduated sizes in the different bobbin carriers. Braids of this type are also produced with loops, or eyes, on one or both sides, by means of loop attachments, which are operated by the carriers and serve alternately to present and withdraw a wire at the forming point of the braid, at one time forcing part of the threads up over the wire to form the loop, and then allowing the threads to pass under the retiring wire, these periods being properly timed in the operation of the machine. By means of such attachments many varieties in design can be produced.

By allowing some of the carriers to run empty, or by removing them entirely, and with the proper use of warp threads, braids with holes or open work are produced, which, when made of glazed yarns or artificial straw, are used extensively in hat forms. Fancy braids are also produced by the introduction of gimps as warp ends, purl-edge braids being made in this manner. Many fancy effects are thus produced by the application of the openwork principle and the use of gimp warp threads of a contrasting color or material. The tension weights, warp threads, and loop attachments are the three most important factors in producing fancy effects in braids on plain machines, and with almost no limit as to variety of patterns.

(2) Machines for making cords and tubular braids: These are made with several complete carrier courses crossing each other. The

carriers of one group do not braid with each other but only with those of the other group or groups, and move simultaneously with them around a common center of rotation, the carriers being so arranged in the different courses that they do not collide in crossing. While most cord machines have two courses, some are made with three or more courses for producing what are known as coral braids. The simplest equipment for braiding cords would contain four carriers. Round braiding machines are arranged in the same manner as the flat ones for producing the plain, diamond, or hercules patterns. The round-braid machines differ from the flat in having no end plates and no end gears with an uneven number of horns.

The appearance of a cord is influenced largely by the number of horn gears, especially when a coarse material is used. A cord made with four gears is therefore almost square in section, and the greater the number of gears the greater the number of sides of the polygon, approaching the circle. If a soft pliable thread is braided over a core, the resulting braid will conform to the shape of the core, as is the case in packings.

Tubular braids have the appearance of two flat braids, one above the other, and joined at the edges. Shoe and corset lacings are braided in this shape. Tubular braiding machines are also used in braiding over the forms of beads, acorns, and molds for tassels. Some spindle bandings and picture cords are produced on round braiding machines, and buggy whips are braided over in the same machines. Insulating materials are also braided on wires, etc., with this type of braider.

Braiding machines are also made which combine the possibilities of Types 1 and 2. They are called cord-edge braid machines, and are so arranged that the course of the carriers producing the flat braid traverses at one point the course of the carriers producing the cord, in such manner that the threads of both sections are firmly interbraided. The products of such braiders are used for binding the edges of garments, such as overcoats, jackets, and skirts. These machines are further provided with attachments for cutting half the threads forming the cord, in this manner forming a brush-edge braid. Some other products of this type of machine are known as loop-edge cords, square cords, diamond pattern cords, plain pattern tubular braids, square braids, loop braids, and fancy coral braids.

(3) Machines for making stripe braids: Machines of this type are made on the principle of joining together two or more sections of flat braids by letting all the carriers of two adjoining sections twist around each other on a plate of such construction that each carrier coming from the right will return in the same direction after crossing one or two of the carriers coming from the opposite direction. In such machines supplementary horn gears are used, and many combinations can be made by groupings of the gears and carriers in different ways, according to the pattern to be produced.

(4) Machines for making lace braids, such as "Barmen lace," contain several courses, so constructed that the carriers of two adjoining courses can pass from one to the other. This braiding from one course to another, however, does not occur continually, as with the stripe braid, but only at intervals and can be regulated according to the pattern; up to certain limits, lace braids can be made by automatic switching of the carriers, certain carriers being provided with collar attachments which throw certain switches, opening and clos-

ing them according to the predetermined routes of the carriers. In these simple lace braids the individual strands are generally made in the form of rickracks or waves, the border of the braids being generally straight to facilitate the sewing-on or attaching of the article in use.

This arrangement for producing lace braids by means of switches operated by the carriers themselves, while allowing for a great many variations, limits the possibilities of the machine to the production of short patterns. The capacity of the machine can be increased by the addition of a revolving pattern disc, operating through connecting parts the switches which regulate the routing of the carriers. The most highly developed machines are provided with Jacquard attachments which, acting in a manner similar to the weaving Jacquard head, greatly increase the range of the braider, making possible the braiding of innumerable patterns of laces.

Production and consumption.—The production of braids was not recorded separately prior to 1919. The census for that year itemized production as follows:

	Linear yards	Value
Braids:		
Flat—		
Woven and knitted	58,350,120	$901,874
Lace and braided lace	101,663,950	1,886,470
Round (including shoe and corset laces)	894,249,563	15,195,776
All other	65,627,056	1,333,504

The production of this portion of the domestic cotton small-wares industry in 1919 therefore totaled 1,119,890,689 linear yards, valued at $19,317,624.

For 1921 the census recorded a production of "Cotton small wares, braided" amounting to 1,995,202,285 linear yards (10,112,922 pounds) valued at $13,025,750. But no details were given as to the types of articles included therein. Preliminary figures for 1923 show a value of $14,659,205 for braided cotton small wares.

Imports of cotton braids amounted to 2,545,964 linear yards, valued at $33,832, in 1919; 15,549,611 linear yards, valued at $172,378, in 1921, and to $157,829 in 1923.

Imported cotton braids consist largely of the rickrack, wave, and serpentine types and are mainly for trimming. On the other hand, the Census production figures, quoted above, for the braided portion of the cotton small-wares industry, embrace "lace and braided lace" and shoe and corset laces, neither group being recorded with braids in import statistics.

EXPORTS

Exports are not recorded.

IMPORTS

Imports of braids were not separately shown prior to the act of 1913. Recorded imports are listed under the tariff classification—"Braids, loom woven and ornamented in the process of weaving, or made by

hand, or on any braid machine, knitting machine, or lace machine." Imports of the fancy braids known as "Barmen lace" are not included thereunder, but are recorded, without specific mention, with "laces."

Table 23 shows imports of cotton braids from October 4, 1913, to December 31, 1924.

TABLE 23.—*Cotton braids, loom-woven, and ornamented in the process of weaving, or made by hand, or on any braid machine, knitting machine, or lace machine—Imports for consumption—Revenue, 1914–1924.*[1]

Fiscal year (unless otherwise stated)	Quantity	Value	Duty collected	Unit value	Actual and computed ad valorem rate
	Yards				*Per cent*
1914 (Oct. 4, 1913, to June 30, 1914)		$297,985	$178,755		60.00
1915		254,923	152,954		60.00
1916		112,593	65,956		60.00
1917		23,305	13,984		60.00
1918		21,171	12,708		60.00
1918 (July 1 to Dec. 31)	80,770	1,966	1,180	$0.024	60.00
1919 (calendar year)	2,545,964	33,832	20,299	.013	60.00
1920 (calendar year)	5,685,819	168,194	100,916	.030	60.00
1921 (calendar year)	[2] 15,549,611	172,378	110,313	.011	63.99
1922 (Jan. 1 to Sept. 21)	[3] 37,611,280	291,886	175,850	.008	60.24
Total (3,275 days, act of 1913)		1,377,186	833,910		60.55
Annual average (act of 1913)		153,488	92,949		60.55
	Pounds				
1922 (Sept. 22 to Dec. 31)	20,675	63,519	57,167	3.164	90.00
1923 (calendar year)	85,859	157,839	142,065	1.838	90.00
1924 [4] (calendar year)	71,836	115,142	103,636	1.603	90.00

[1] Not separately recorded prior to the act of 1913.

[2] Includes 1,605,696 yards (96,572 pounds), valued at $30,941, containing cotton of 1⅛ inches or longer and paying, under the emergency tariff act, 7 cents a pound in addition to the regular duty of 60 per cent ad valorem.

[3] Includes [illegible] yards (10,153 pounds), valued at $14,946, subject to emergency tariff act surtax of 7 cents a pound.

[4] Preliminary figures.

TABLE 24.—*Total braids, loom-woven, and ornamented in the process of weaving, or made by hand or on any braid machine, knitting machine, or lace machine—Imports for consumption, 1914–1924.*[1]

Year	Cotton	Flax, etc.	Wool	Silk	Artificial silk and artificial horsehair	Metal thread	Total
Fiscal							
[illegible]	$297,985	$1,[illegible]50	$355	$[illegible]57	$38,681	$1,212	$339,400
[illegible]	254,923	2,[illegible]62	263	1,[illegible]80	37,628	1,[illegible]94	298,494
[illegible]	112,593	4,[illegible]42	4,[illegible]53	43,[illegible]43	9,[illegible]23	175,000
[illegible]	23,305	4,[illegible]29	286	1,[illegible]98	92,[illegible]76	19,[illegible]63	150,655
[illegible]	21,[illegible]71	[illegible]	650	30,[illegible]94	45,[illegible]86	30,[illegible]12	121,648
Calendar							
[illegible]	1,[illegible]66	[illegible]	[illegible]	1,[illegible]58	2,[illegible]65	9,[illegible]62	16,133
[illegible]	[illegible]5,[illegible]64	[illegible]	[illegible]	[illegible]57,[illegible]97	38,[illegible]78	5,[illegible]61	53,845
[illegible]	[illegible]68,[illegible]12	[illegible]	[illegible]	[illegible]77,[illegible]33	3,[illegible]89	953,832
[illegible]	[illegible]5,[illegible]76	[illegible]	[illegible]1,[illegible]94	[illegible]50,[illegible]65	5,[illegible]86	985,792
[illegible]	[illegible]4,[illegible]66	[illegible]	[illegible]57	[illegible]88,[illegible]24	6,[illegible]91	977,563
Annual average [illegible]	[illegible]2,[illegible]46	[illegible]1,[illegible]20	[illegible]36	[illegible]5,[illegible]62	[illegible]65,[illegible]98	[illegible]8,[illegible]29	467,609
[illegible]	[illegible]1,[illegible]74	[illegible]4,[illegible]26	[illegible]	[illegible]2,[illegible]47	[illegible]98,[illegible]86	4,[illegible]87	451,468
[illegible]	[illegible]1,[illegible]74	[illegible]4,[illegible]26	[illegible]	[illegible]2,[illegible]47	[illegible]98,[illegible]86	4,[illegible]87	451,468
[illegible]	[illegible]1,[illegible]74	[illegible]4,[illegible]26	[illegible]	[illegible]2,[illegible]47	[illegible]98,[illegible]86	4,[illegible]87	451,468

[illegible]

The value of the imports in the nine months of the fiscal year 1914 covered by the act of 1913 was recorded as $297,925. Imports decreased sharply during the war period, largely because Germany had been the main source. After the war, imports again increased and in the calendar year 1922 were valued at $355,417. This increase was due partly to the anticipated higher duties under the act of 1922, and resulted in the partial overstocking of the domestic market. In 1923, with higher duties in effect, imports dropped to a value of $157,829. This decrease was due, partly, to the overstocked market, to the rise in German exchange, and to changes in fashion. Preliminary figures for 1924 show imports of $115,142.

In addition to Germany, the main source, there are small imports from Czechoslovakia, Austria, and England. Rickrack braids predominate in the imports.

Table 24, page 90, shows the value of imports, separately listed as to material, of all braids enumerated in paragraph 358 of the act of 1913, and in paragraph 1430 of the act of 1922.

Prior to the World War braids of cotton predominated in the import trade, but since the war the main item has been braids of artificial silk, cotton braids having fallen into second place.

COMPETITIVE CONDITIONS

In the early part of 1923, importers and jobbers stated that the market was then overstocked, partly because of large imports in advance of the present law. Several leading jobbers of notions, and the purchasing agents of some large systems of chain stores, then stated that they were purchasing their braids from domestic manufacturers, and were unable to import to advantage. On the other hand, a few large jobbers of imported and domestic products asserted that they were able to import several lines of braids in competition with domestic articles. Cotton braids of the standard types are made of medium yarns readily obtainable in the domestic market, and the question of competition between domestic braids and those imported depends largely upon costs in this country and abroad. With the present rate of duty, it would appear that domestic manufacturers, equipped for quantity production, can compete in the domestic market with imports, and that some modern plants are even able to export.

TARIFF HISTORY

In the act of 1883, paragraph 324, cotton braids were dutiable at 35 per cent ad valorem; in the act of 1890, paragraph 354, they were provided for at 35 cents per pound, but with a minimum ad valorem rate of 40 per cent; in the act of 1894, paragraph 263, at 45 per cent ad valorem. In these three acts they were grouped in Schedule I with other cotton small wares. In the act of 1897 cotton braids were included in the lace and embroidery paragraph of Schedule J, and braids of cotton or other vegetable fiber were provided for at 60 per cent ad valorem. The same arrangement and the same rate of duty were provided for braids in the act of 1909, Schedule J, paragraph 349. In the act of 1913 braids were grouped with lace, embroidery, etc., of any material, in paragraph 358 of the Sundries Schedule, where, under the more extended description of "braids,

Braids of cotton and other vegetable fiber and other materials, including such as are known as "Battenberg braids," "crown braids," "featherstitch braids," "featheredge braids," "guipure lace braids," "herringbone braids," "honiton braids," "linen bobbins," "novelty braids," "renaissance braids," "rickrack braids," "star braids," "wave braids," and by various other names, were held to be dutiable at 60 per cent advalorem under paragraph 339 of the act of 1897. (G. A. 5096, T. D. 23564 of 1902, *Hiller et al.* v. *United States*, 106 Fed. 73 of 1901, certiorari denied, 180 U. S. 639.)

Certain so-called featherstitch braids, produced by a process of weaving and not of braiding, commercially known as "braids," were held to be dutiable as such under paragraph 339, and not under paragraph 320 relating to bindings, tapes, etc. (*Von Baur* v. *United States*, 141 Fed. 439 of 1905.)

In the case of *Steinhardt* v. *United States* (121 Fed. 442 of 1903), the Circuit Court for the Southern District of New York, reversing a decision of the Board of General Appraisers, held that "narrow-woven tapes of cotton, used generally for covering seams of underwear and waists" were dutiable as bindings or tapes at 45 per cent under paragraph 320, tariff act of 1897, and not as braids at 60 per cent, paragraph 339. In that case the court reversed the board's decision on the strength of the definition given in the Standard Dictionary that a braid is a "narrow, flat tape or woven strip for binding the edges of fabrics or for ornamenting them." But in *United States* v. *Baruch* (223 U. S., 191 of 1912) the Supreme Court held that cotton featherstitch braids ranging variously from about one-fourth to one-half of an inch in width, loom-woven, of white and variously colored threads of cotton or other vegetable fiber, and ornamented with raised figures in various designs, some of which had plain and others scalloped or ribbed edges, were properly dutiable at 60 per cent as braids under paragraph 339 rather than as tapes or bindings at 45 per cent under paragraph 320. The court held that where a conflict which had existed under prior tariff acts as to the classification of such articles had been settled Congress would not be presumed, in enacting a new tariff, to renew the conflict by not adhearing to the commercial and tariff meaning of the terms as it had been settled.

Under the act of 1909, cotton braids, whether as ornaments or otherwise and irrespective of the use to which applied, were held to be dutiable as braids under the provisions of paragraph 349. (G. A. 7110, T. D. 31000 of 1910.)

Under the act of 1913, elastic braids in chief value of india rubber thread, which are recognized as a distinct article of commerce and bought and used as such by manufacturers of braids, were held, in the absence of proof to show that the terms "yarns," "threads," or "filaments" have a meaning in trade and commerce different from the ordinary meaning, to be properly dutiable under paragraph 358. (G. A. 7626, T. D. 34887 of 1914.)

Rickrack braids, ornamented in design, were held to be dutiable as "braids ornamented in the process of weaving." (Abstract 37956 of 1915.)

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UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPHS 259, 260, AND 261 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

COTTON KNIT GOODS

Paragraph 259:
Cut Cotton Hosiery

Paragraph 260:
Full-Fashioned and Seamless Cotton Hosiery
Cotton Gloves, Knit or Woven

Paragraph 261:
Cotton Knit Wearing Apparel

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this, industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act, reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and Index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and index," the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Evelina P. Kean, of the textile division of the commission's staff, and of others.

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COTTON KNIT GOODS.

General Introduction.

The knit-goods industry in comparison with weaving is of recent development, its origin dating from the invention of the knitting "frame" in the latter part of the sixteenth century. In the three and a quarter centuries which have since elapsed great strides have been made in the application of the knitting process.[1] The knitted fabrics now produced vary from an extremely elastic type having a stretch several times the original width to a firmly knit texture with little more "give" than a woven cloth; and, from a plain fabric made throughout of one kind of yarn in a plain loop stitch to elaborate designs in color combinations or in stitch formation. A decided advantage of knitting over weaving is that garments can be shaped entirely on the knitting machine. This is of special importance where the material used is expensive and the elimination of material waste offsets greater labor cost, or where the garment made is so simple that its completion on the knitting machine requires less labor than would cutting and sewing, as, for example, the seamless stocking. In general, knitted fabrics can be produced at less cost than woven fabrics of similar material, because the rate of production is greater.

The value of knit goods produced in the United States increased from $95,833,692 in 1899 to $713,140,000 in 1919, and the number of establishments from 1,006 to 2,050. The increased use of cotton yarn in the knit-goods industry is shown in the table below:

Table 1.—*Cotton yarn used in the knit-goods industry in the United States.*

[From the Federal Census.]

	Purchased.	Made in knitting establishments.	Total.
1899—Pounds	131,820,068	40,845,889	172,665,957
Per cent	76.34	23.66	100
1904—Pounds	161,500,466	39,954,890	201,455,356
Per cent	80.17	19.83	100
1909—Pounds	216,987,611	69,171,277	286,158,888
Per cent	75.83	24.17	100
1914—Pounds	205,524,143	75,970,761	281,494,904
Per cent	73.01	26.99	100
1919—Pounds	217,411,343	87,063,037	304,474,380
Per cent	71.41	28.59	100

The industry has developed faster than the above figures indicate, because finer and finer counts of yarn are being made up into hosiery, underwear, and other knitted articles. Hence, the pounds of yarn consumed are not an exact index of the quantity of goods produced. The yarns used have improved in finish as well as in fineness. In 1914 only 15,672,427 pounds of mercerized yarn were consumed, compared with 30,519,234 pounds in 1919. A little over one-fourth of

[1] Dept. of Com. Misc. Series, No. 31, p. 173. Chamberlain and Quilter: Knitted Fabrics. Metcalf: Knitting.

the total yarn used was made in the knitting mills and less than 1 per cent was imported in 1914. Investigation showed that the bulk of the yarns imported for the use of the knit-goods industry in 1914 ranged from 50s to 99s.[2]

Cotton knit goods include knit fabric in the piece and all types of knit articles—hosiery, underwear, gloves, sweaters, bathing suits, towels, and fancy specialties; the bulk of the output, however, consists of hosiery and underwear, the value of which in 1919, totaled $297,184,505.

Although there are considerable quantities of knit cotton fabric in the piece, the Census Bureau does not record its production separately from knit fabric of other materials. Knit cotton gloves were recorded separately only in 1919. The production of hosiery and underwear knit of cotton is more important than that of silk or wool, and, in fact, is almost equivalent to the combined output of the two. According to the census, in 1899 cotton hosiery and cotton knit underwear combined represented 52.49 per cent of the value of the total output of the knit-goods industry in this country; in 1904 they amounted to 57.43 per cent; and in 1909, to 57.77 per cent. During the five years 1909 to 1914 the use of silk hosiery became so much more general that the recorded production of cotton knit goods declined in 1914 to 49.57 per cent of the total output of the knitting industry. The proportion was further reduced to 41.67 per cent in 1919. This was the result partly of an actual decrease in the quantity of cotton hosiery, but principally of the phenomenal growth of the outerwear industry, which uses more wool and silk than cotton. The great demand in the domestic market accounts for the large production in this country, as the share of the United States in export trade is normally very small.

The following table of international trade in cotton knit goods in 1913 shows the principal countries of export prior to the war, and the most important markets. Similar statistics are not available for a post-war year:

TABLE 2.—*International trade in cotton knit goods.*

[Calendar year 1913, except where noted.]

Country.	Imports.	Exports.	Country.	Imports.	Exports.
United Kingdom	$14,804,784	$3,380,310	Mexico [d]	$543,757	.....
Ottoman Empire [a]	3,537,536	59,694	Sweden	511,697	$89,235
United States	3,531,908	2,685,231	Germany	425,000	38,871,000
British South Africa	3,387,332	.....	Austria-Hungary	406,413	361,497
British India [b]	2,981,242	53,171	Denmark [c]	399,672	.....
Australia	2,943,347	.....	Rumania	341,000	.....
France	2,840,879	5,809,652	French Indo-China	233,668	.....
Netherlands [c]	2,061,510	410,076	Venezuela	232,497	.....
Russia	2,051,134	.....	Serbia [c]	227,729	.....
Argentina	1,966,491	.....	Brazil	213,816	.....
China	1,416,761	.....	Spain	180,504	2,284,155
Cuba	1,348,103	.....	Norway [c]	172,378	268
Canada [b]	1,237,724	.....	Egypt	123,034	.....
Algeria	1,015,180	.....	Tunis	97,822	.....
Chile	872,124	.....	Japan	50,442	5,321,554
Belgium	807,712	114,136	Greece	37,791	.....
Italy	726,023	722,862	Portugal	36,305	.....
Switzerland [a]	646,530	602,303			

[a] Year ended Mar. 13, 1912. The figures include knit goods of all kinds.
[b] Year ended Mar. 31, 1913.
[c] Figures include knit goods of various fibers other than cotton.
[d] Year ended June 30, 1913.

[2] Tariff Information Series, No. 12.

The predominance of Germany in pre-war export trade in cotton knit goods is very evident from the above table. This position was entirely lost during the war, and to what extent it has been regained can only be judged from trade reports and the partial trade statistics that are available. It is said that the output of the German hosiery mills is about 60 to 80 per cent of the 1913 production.[3] Exports of cotton hosiery and underwear have apparently not reached the pre-war level, as 15,013,400 kilos[4] were exported in the calendar year 1913 and 5,815,300 kilos in the year ended April, 1922. The fact that 2,471,200 kilos, or more than one-third the total of the post-war year, were shipped in the four months January to April, 1922, might indicate that exports are on the increase, although it is pointed out by American consular agents that German manufacturers are not likely to retain any decided advantage over their foreign competitors.[5]

France, although far exceeded by Germany in the magnitude of her foreign trade in cotton knit goods, was second in 1913. Unlike other countries, France was too much involved in the war to be able to profit to any extent by Germany's enforced withdrawal from outside markets. French mills were, no doubt, kept busy supplying hosiery and underwear for the French armies. The total quantity of cotton knit goods exported from France amounted to 1,884,500 kilos in 1913, and to 1,900,800 kilos in 1921.

During the war when Germany was blockaded, the countries that were able to increase their production made every effort to supply the markets that had been users of German goods. The Japanese were quick to seize this opportunity, and enlarged their knit-goods industry as rapidly as possible, importing all the equipment they could obtain. Their goods were sold at so low a price that they were at first able to place enormous orders, but because of their limited knowledge of foreign requirements, their goods did not meet with great favor, and after the war Japanese exports fell off in volume.

British knit-goods manufacturers, who had hitherto been interested primarily in woolen goods, turned their attention to cotton. Their pre-war exports, in comparison with the exports of Germany, were insignificant, and in fact were much smaller than imports into Great Britain, which accounted for over one-third of the German foreign trade in knit goods in 1913.[6] The value of cotton knit goods exported from Great Britain in 1920 was about four times that exported in 1913, the greatest increase being in hosiery.

The growth of the American export trade in cotton knit goods was more extraordinary than that of any other country, increasing from a

[3] Consul T. B. Hogg, Berlin, Daily News Record, June 24, 1922.
[4] 1 kilo=2.2046 pounds.
[5] Commerce Reports, July 17, 1922, p. 161.
[6] Official German trade statistics.

value of $2,613,806 in 1913 to $54,458,062 in the calendar year 1920. The following table shows the markets in some detail:

TABLE 3.—*Knit cotton wearing apparel—Domestic exports.*

Exported to—	Fiscal year.						
	1910	1911	1912	1913	1914	1915	1916
United Kingdom	$525,346	$683,842	$745,774	$1,041,498	$931,094	$9,139,357	$11,921,765
Australia	67,691	73,504	86,651	121,777	142,627	635,494	1,685,466
Cuba	105,378	154,722	193,028	185,444	200,476	403,420	808,457
Argentina	250	.....	2,215	30,907	67,472	169,572	1,686,512
Canada	130,057	186,462	247,696	396,879	440,558	588,907	976,805
Uruguay	9,079	6,668	30,466	25,825	26,836	25,609	377,810
Chile	3,635	4,440	7,718	17,583	22,576	6,638	141,485
New Zealand	1,389	8,587	4,574	9,445	12,714	34,962	214,535
Mexico	11,139	32,508	25,330	41,294	59,539	47,940	250,808
France	3,483	335	8,399	17,795	30,892	1,179,364	254,805
British South Africa	20,970	22,949	76,100	39,336	26,882	70,906	274,564
Peru	2,784	4,948	8,734	11,196	11,105	14,909	175,503
Denmark	152	314	557	304	1,986	44,062	90,229
All other countries	293,794	466,940	421,594	674,623	572,065	709,305	2,035,354
Total	1,175,147	1,646,219	1,858,836	2,613,806	2,546,822	13,080,445	20,894,098

Exported to—	Fiscal year.				Calendar year.		
	1917	1918	1919	1920	1920	1921	Jan. 1 to Sept. 30, 1922.
United Kingdom	$4,427,356	$1,907,338	$3,466,161	$12,014,558	$11,145,000	$2,671,698	$3,375,467
Australia	1,549,174	1,032,195	3,368,207	2,235,851	4,661,852	582,632	746,955
Cuba	1,463,437	2,386,115	2,361,555	4,325,823	6,610,121	537,825	1,081,087
Argentina	1,657,979	2,926,872	3,794,093	2,653,392	3,716,277	1,425,022	1,772,083
Canada	1,608,259	1,803,960	1,524,514	2,348,520	1,796,405	1,014,835	1,039,340
Uruguay	492,905	492,597	803,665	678,059	1,185,881	250,435	336,435
Chile	537,306	676,443	919,007	509,162	1,138,409	133,145	70,460
New Zealand	235,017	112,369	408,180	168,221	346,087	68,201	67,606
Mexico	538,027	613,765	555,606	616,347	776,353	637,210	401,760
France	483,261	346,180	286,198	2,801,595	2,728,964	58,838	134,274
British South Africa	264,099	370,033	594,334	760,327	1,049,486	180,504	199,740
Peru	269,704	160,997	246,728	572,612	879,541	101,987	88,770
Denmark	474,892	59,420	2,173,930	3,326,783	1,298,317	161,000	62,929
All other countries	3,756,777	2,464,880	7,005,597	18,548,419	17,125,369	2,439,132	1,986,467
Total	17,758,193	15,353,164	27,507,775	51,559,669	54,458,062	10,262,464	11,363,373

Exports have always been scattered over a wide field. More than 100 markets therefor are listed in the Commerce and Navigation Reports. The great expansion in the export trade during the war represented not so much the acquisition of new markets as increased trade where some trade already existed. A considerable proportion of it was with Great Britain and in some years probably included large "war orders." The greatest total exports, however, were in 1920. In 1921 the value was less than one-fifth that in 1920. This was still much above the pre-war average value and, even allowing for increased prices, was probably larger in volume.

American exports of cotton knit goods increased relatively more than did production during the same period, notwithstanding diminished imports. The domestic market shows an increasing tendency toward the use of silk, which explains the surplus of cotton knit goods for export during a period of general prosperity and high wages.

Imports, which consist principally of hosiery, have never been a large part of the domestic consumption. The largest total value

of cotton knit goods imported in any one year since 1891 was $9,032,574, in 1908. This was less than 8 per cent of the 1909 production of cotton hosiery and underwear. Imports of cotton knit goods average about 10 per cent of total imports of cotton manufactures, and the average equivalent ad valorem rates on cotton knit goods have always been considerably higher than on total dutiable cotton manufactures; under the acts of 1897 and 1909 the rates were frequently even higher than the rates for laces and embroideries. Judging from the small proportion of imports, previous tariff rates have been a more or less effective barrier to foreign trade in cotton knit goods as a whole. Table 4 gives the total imports of cotton knit goods and the percentage received from each country. This shows clearly the predominance of German goods in the imports, and the rise and decline of Japanese trade in the 5-year period, 1917–1921. The total value of imports for 1921 was not far below that of 1914, the only pre-war year which included all cotton gloves,[7] but as the unit value of gloves, an important item, was over twice that of 1914, the volume of goods received was not as great.

TABLE 4.—*Total imports of cotton knit goods and the percentage received from the principal countries 1891 to 1922.*

	Total value.	Received from—					
		Germany.	France.	Switzerland.	United Kingdom.	Japan.	Other countries.
Fiscal year:		*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
1891	$6,738,775	82.9	9.4	0.6	7.0	.....	0.1
1892	5,833,652	86.9	7.3	.8	4.9	.....	.1
1893	6,392,175	88.0	7.0	1.2	3.7	.....	.1
1894	4,360,655	89.5	5.9	1.3	3.0	.....	.3
1895	6,535,179	91.1	4.7	.4	3.5	.....	.3
1896	6,190,672	89.0	6.6	.7	3.4	.....	.3
1897	5,596,703	89.2	6.0	1.1	3.3	.....	.4
1898	4,034,483	89.6	6.0	1.4	2.9	.....	.1
1899	4,335,269	88.5	7.0	1.6	2.9	.....	.....
1900	4,715,762	88.7	5.6	2.0	3.5	.....	.2
Average	5,473,333	88.2	6.6	1.1	3.9	.....	.2
1901	5,462,217	88.6	6.3	2.2	2.8	.....	.1
1902	5,363,515	87.4	6.9	2.4	2.7	.....	.6
1903	6,157,744	88.8	5.1	2.5	2.0	.....	1.6
1904	6,044,691	90.1	5.1	2.4	1.7	.....	.7
1905	6,150,484	89.5	5.1	3.1	1.6	.....	.7
1906	7,218,897	88.4	5.9	2.9	1.6	.....	1.2
1907	8,671,848	90.3	4.8	2.9	1.3	.....	.7
1908	9,032,574	92.2	3.3	2.9	1.1	.....	.5
1909	6,917,828	87.4	2.3	3.2	1.7	.....	5.4
1910	6,462,375	91.6	3.2	3.2	1.4	.....	.6
Average	6,748,217	90.1	4.6	2.8	1.7	.....	.8
1911	4,176,515	89.4	3.3	4.5	1.8	.....	1.0
1912	3,247,894	88.8	2.9	5.0	2.4	.....	.9
1913	3,089,411	89.5	3.1	4.4	2.5	.....	.5
1914	[a] 5,671,863	92.9	2.6	2.2	1.9	.....	.4
1915	4,149,427	91.3	1.4	3.6	2.5	.....	1.2
1916	1,411,439	79.7	2.9	10.3	5.1	0.7	1.3
1917	399,088	10.4	11.2	42.1	26.5	5.3	4.5
1918	1,035,218	.....	4.4	9.4	11.5	70.7	4.0
1919	842,233	.2	2.3	13.9	11.1	26.1	[b] 46.4
1920	931,991	18.6	3.8	13.0	16.5	43.9	4.2
Average	2,495,508	78.6	2.9	5.6	4.0	5.8	3.1
Calendar year:							
1920	2,440,486	68.1	1.9	5.7	11.3	11.7	1.3
1921	4,819,238	91.3	1.7	3.7	2.7	.1	.5
1922, Jan. 1 to Sept. 21	5,402,919	94.4	1.7	.1	3.1	.2	.5

[a] 1914 and after, women's cotton gloves included.
[b] 45.7 per cent from Canada, probably transshipments of Japanese goods.
[7] See Table 4 below.

COTTON HOSIERY.

SUMMARY.

The output of the American cotton-hosiery industry in 1919 amounted to 60,613,342 dozen pairs of socks and stockings, valued at $153,497,486, a decrease of 1.3 per cent in the quantity produced since 1914. This decrease was the outcome of the growing popularity of silk and artificial-silk hosiery. From 1899 to 1919 there was a quantitative increase of 130 per cent.

Duties on cotton hosiery from 1891 to 1920 averaged 60.61 per cent ad valorem. Imports have not been large in comparison with domestic production. In 1914 imports amounted to 3.6 per cent of the domestic production; in 1919 they were entirely negligible. The emergency tariff act, which placed a duty of 7 cents a pound on hosiery made of long-staple cotton, does not seem to have affected the character of the imports, because about one-half of the imports since that act became effective have been dutiable under that provision. This additional 7 cents a pound increased the equivalent ad valorem duty on the articles upon which it was imposed by about 4 to 5 per cent, and on the total cotton hosiery imports by about 2 per cent. Practically all of the cotton hosiery brought into the United States comes from Germany. In normal times that country supplies most of the cotton hosiery which enters into international trade.

The embargo which German trade suffered during the war left the usual foreign markets of Germany open to the cotton-hosiery industry of other countries. An extraordinarily rapid expansion of the American export trade took place during the years of industrial prosperity immediately following the war. In the fiscal year 1920 American manufacturers shipped abroad 12,392,935 dozen pairs of cotton hosiery, valued at $37,178,239. This was more than twice the quantity ever imported in a single year. Since 1920 exports have fallen off considerably. The general business depression, rather than competition, has been the cause. However, although Germany has not regained her former trade, it is noticeable that her exports to several western European countries have increased, while those of the United States to the same countries have dwindled. The question of competition for the American manufacturer seems to resolve itself into domestic competition in the domestic market and foreign competition in foreign markets. The tariff problem is overshadowed by the labor problem and the problem of trade facilities—transportation, credit, and exchange.

TABLE 1.—*Cotton hosiery—Summary table.*

	Domestic production.	Imports for consumption.	Domestic exports.	Ratio of imports to production.	Imports for consumption, value.	Amount of duty.	Value per unit of quantity.	Equivalent ad valorem rate.
Fiscal year:	*Doz. pairs.*	*Doz. pairs.*	*Doz. pairs.*	*Per cent.*				*Per cent.*
1910	57,305,021	4,477,783	.....	7.82	$5,825,100	$4,141,689	$1.30	71.10
1911	.....	2,983,129	.....	.....	3,824,970	2,803,950	1.30	73.31
1912	.....	2,349,663	.....	.....	2,912,430	2,116,086	1.24	72.66
1913	.....	2,028,988	.....	.....	2,553,928	1,792,592	1.26	70.19
1914	61,409,575	2,194,371	.....	3.57	2,949,678	1,407,112	1.34	47.70
1915	.....	1,364,757	.....	.....	1,705,347	747,151	1.25	43.81
1916	.....	218,760	.....	.....	368,765	175,284	1.69	47.53
1917	.....	63,584	.....	.....	147,281	71,581	2.32	48.60
1918	.....	117,056	5,664,101	.....	142,136	60,521	1.21	42.58
1919	60,613,342	60,686	7,454,203	.10	120,282	53,472	1.98	44.46
1920	.....	75,283	.....	.....	193,802	91,789	2.57	47.36
Calendar year:								
1920	.....	154,337	11,575,655	.....	656,443	320,976	4.25	48.89
1921	50,546,831	703,884	2,508,258	1.39	1,414,210	678,529	2.01	47.98
1922, Jan. 1 to Sept. 21	.....	1,096,490	3,480,593	.....	1,601,453	749,227	1.46	46.78

GENERAL INFORMATION.

TARIFF ACT OF OCTOBER 3, 1913.

PAR. 259. Stockings, hose and half hose, made on knitting machines or frames, composed of cotton or other vegetable fiber, and not otherwise specially provided for in this section, 20 per centum ad valorem.

PAR. 260. Stockings, hose and half hose, selvaged, fashioned, narrowed, or shaped wholly or in part by knitting machines or frames, or knit by hand, including such as are commercially known as seamless stockings, hose and half hose, and clocked stockings, hose and half hose, all of the above composed of cotton or other vegetable fiber, finished or unfinished; if valued at not more than 70 cents per dozen pairs, 30 per centum ad valorem; if valued at more than 70 cents, and not more than $1.20 per dozen pairs, 40 per centum ad valorem; if valued at more than $1.20 per dozen pairs, 50 per centum ad valorem.

DESCRIPTION.

There are three general classes of hosiery, according to method of manufacture: Full-fashioned, seamless, and "cut" hosiery.

Full-fashioned hosiery, which is made on flat knitting machines [1] of the Cotton type, is knitted flat, shaped, and selvaged ready for seaming. The full-fashion machine shapes the stocking in the knitting by increasing or diminishing the number of stitches in the width. The stitches in the width form lines of interlocking loops running the length of the stocking. These lines are called wales; each wale represents the work of a needle in the machine. To narrow the fabric the loop carried by one needle is transferred to the needle next it toward the center, so that where two wales were being knit only one will continue. This is done simultaneously on each side of the stocking, so that the finished article will show, along either side of the seam just above the ankle and at other places in the leg and foot, a series of what appear to be larger stitches but which upon examination prove to be the points where two or more wales become one. In this manner the full-fashioned stocking is made to conform closely to the shape of the leg.

Seamless stockings are made in tubular form on circular machines and because of the constant diameter of the machines can not be

[1] See Tariff Information Survey, Textile Machinery.

widened and narrowed as can full-fashioned stockings. Some slight difference is made by more tension in the ankle portion, but the shaping is almost wholly dependent upon the boarding process. In a seamless stocking the heel and toe are made in the form of pockets. The toe which is at one end of the open tube is closed after leaving the machine.

Because of the superiority of the full-fashioned hose it is desirable, for sales purposes, that the product of the circular machine shall resemble that of the flat machine as nearly as possible, hence an unnecessary seam is frequently put on these hose, which are then known as "mock seamed." Sometimes this is done by a separate operation on a power sewing machine, just as the actual seam is made in full fashioned hosiery, but a knitting machine has been developed which will simulate a seam during the process of knitting. This similarity in appearance to full-fashioned hosiery has been carried still further on a recent development of the circular machine by the formation of stitches called "crow's feet," which look like the narrowing stitches in full fashioned hose, but which do not in reality alter the number of wales. Such stockings are usually called "mock-fashioned" or "fashion-marked."

Full-fashioned hosiery fits better and is more elastic than seamless hosiery; but seamless hose are cheaper, as the circular machine is more productive and the labor cost therefore less. Comparatively unskilled labor can be used to operate a circular hosiery machine—in fact, this work is frequently done by girls—whereas the operator of a full-fashion machine is always a man, and usually a skilled mechanic.

The labor cost in the manufacture of full-fashioned hosiery is usually a greater proportion of the total cost than in the manufacture of seamless hosiery. The knitting is slower, the knitters receive a higher wage, and the operatives in subsequent processes are usually better paid. Manufacturers of full-fashioned hosiery estimate the labor cost at from 33⅓ to 60 per cent of the total cost, while the seamless ranges from 25 to 50 per cent. A slight difference in the method of making a stocking will give a difference in labor costs, and the possibilities for variation are so endless that it is impossible to lay down any hard and fast limits of the proportion of labor cost.

Seamless fashioned hosiery can be made on a type of straight knitting machine which has two parallel rows of needles. This machine has one advantage over the ordinary circular machine—the hose can be narrowed to the shape of the ankle without seaming, but it is not extensively used because production is slow, as the machine is not entirely automatic. A variation of the circular machine, which can produce seamless fashioned hosiery, is used by one or two concerns, but this machine is not on the open market.

"Cut" hosiery (par. 259, act of 1913) is an inferior grade of hosiery cut out (as a seamstress would cut a dress) of long tubular webs made on large circular machines or from the good portions of other kinds of materials spoiled in the making. Very little of this is done in the United States at the present time, and the salvaging of imperfect hose is probably the only reason for its continuance. The Germans have developed a type of children's sock which has a cut foot and a selvaged top. The top is made separately on flat machines, which makes possible elaborate Jacquard designs and color combinations. To lessen the price of the article, this top is combined with the cut foot or, in some cases, a seamless foot.

Some mills that have spinning departments reduce the material in hose which are too imperfect to sell as seconds to the condition of raw stock, and then spin it into coarse yarn, from which they make heavy socks, known as lumbermen's or workmen's socks. The yarns in some rejected goods can be reclaimed by raveling and rewinding.

Competing articles.—Fastidiousness in matters of dress has become so marked that an expensive article appealing to taste is strongly competitive with one more durable but less attractive. Matters of general style in dress, such as the length of women's skirts, have a marked effect upon the character of hosiery demanded. Of late years silks and artificial silks have gained such universal vogue that the cotton-hosiery industry has felt the encroachment of these lines. In fact, relatively small quantities of full-fashioned cotton hosiery are being made. On the other hand, many manufacturers of seamless hosiery who at one time produced cotton hose exclusively, are making stockings of silk and artificial silk. This trend is emphasized by the alignment of census figures showing the increase in the silk-hosiery industry to have been nearly 2,000 per cent and in cotton only about 7 per cent in 1914 over 1909. Silks and artificial silks increased 120.8 per cent in 1919 over 1914, while there was a reduction in the cotton-hosiery output.

The figures given above represent the relative growth and not the relative importance of the two lines of manufacture, the actual quantity of cotton hose having always been much greater than that of silk. The total production of silk and artificial-silk hosiery amounted in 1914 (in quantity) to about 14 per cent of the total production of cotton hosiery. In 1919 it had increased to 31 per cent.

DOMESTIC PRODUCTION.

Size of the industry.—It is impossible to give any definite idea of the size of the cotton-hosiery industry except through production figures, as it is not separated from other types of hosiery. The American Directory of the Knitting Trade for 1920 lists 727 manufacturers of seamless hosiery, who are probably predominantly cotton manufacturers, and 106 makers of full-fashioned hosiery, the greater number of whom probably do not make cotton hose. The value of the output of the hosiery industry in 1919 represented about 43 per cent of the total knit-goods industry, and cotton hosiery about 50 per cent of the total hosiery industry. In 1909 the value of cotton hosiery produced was over 81 per cent of the total hosiery produced.

Materials.[2]—Cotton yarn from which hosiery is made covers a wide range of counts and processes. Number or count of yarn means the number of 840-yard hanks required to weigh 1 pound. No. 1 cotton yarn measures 840 yards to the pound and No. 100 cotton yarn measures 84,000 yards to the pound; the higher the count the finer the yarn. The yarns most used in hosiery range from 16s to 20s in coarse goods and from 80s up to 120s in fine goods.

One of the processes preliminary to spinning is carding; ordinary yarn which undergoes no special additional process is usually called "carded" yarn. Sometimes the cotton is combed as well as carded before it is spun. Yarns so made are described as "combed." They

[2] See Tariff Information Series, No. 12, and Summary of Tariff Information, 1921, p 843.

are smoother and stronger than carded yarns made from similar cotton but are relatively more expensive, not only because of the extra labor, but also because of the greater amount of waste. A further removal of fuzz and loose projecting fibers is effected by gassing or singeing after spinning and doubling. This greatly improves the appearance of the yarn, making it smoother, rounder, and brighter and incidentally slightly increases the strength.

Mercerization is a process in which the yarn is treated, under tension, with caustic alkali to obtain a lustrous silklike finish. Accompanying results are greater strength and greater affinity for dyestuffs. Mercerized yarns are frequently also gassed.

Lisle yarn refers to a fully gassed two-ply yarn, the individual threads are spun with a right and left twist, respectively, and then doubled. This gives the yarn the hard, clean, wiry appearance of linen.

The condition and finish of the yarn used in making hosiery materially influence the price and are therefore frequently included in descriptions for price quotations.

The manufacture of hosiery is in many cases a highly integrated industry. Large mills frequently spin the yarn for their standard grades, buying only that which is required in small quantities. Such mills are more independent than those which rely solely on purchasing, but at the present time are more liable to losses on a receding market as their raw material is farther removed from their finished product.

Knitting yarns are sold on the open market in greater quantities than weaving yarns because the latter are more frequently made in the establishments in which they are used. Philadelphia is an important center of the knitting-yarn trade.

There are no separate statistics showing the amount of cotton yarn used in making hosiery, but the total quantity of cotton yarn used in the knit-goods industry is shown on page 1. It is practically all of domestic origin.

Long-staple cottons, of which the imported Egyptian, American-Egyptian, and southern peeler are the most important, make the best hosiery yarns. Sea Island cotton is of the highest quality, but very little is obtainable since the boll weevil has infested the region in which it is grown.

Equipment.—Many machines used in the hosiery industry are made in this country. The full-fashion hosiery machine of the Cotton patent type, though originally an English invention, has been developed commercially in Germany. Most of the full-fashion machines in use in the United States are of German manufacture. However, they are now being built in this country. These machines are so large and intricate that their construction is necessarily slow, and at the time of greatest expansion in the hosiery industry they could not be turned out fast enough to meet the demand. There has been little modification in this type of machine for some years; loss through obsolescence has therefore been almost negligible. The trend of the trade toward finer hosiery has necessitated the substitution of finer-gauge machines—many mills have replaced 33 and 36 gauge machines by 39 and 42 gauge—but the machines so replaced have been disposed of to manufacturers of coarser goods. One improvement developed in this country is the individual-motor drive, which

requires less space and saves time, because the stoppage of one machine does not arrest the motion of others, as in the belt and shaft system.

The seamless industry presents quite a different situation. The latest circular machines are so perfectly automatic that only the closing of the toe is needed to complete the formation of the stocking after it is knit. But this perfection has been brought about by a series of improvements which in many cases have called for the actual scrapping of antedating machinery. The result is that whereas seamless hosiery machinery is more nearly automatic than the full-fashioned, the industry has not kept pace with the inventions, and many mills, even some of the largest, are using machines which are really out of date. This is partly because of the capital required to replace the machinery, but very largely because the growth of the industry has so taxed the machine manufacturers that it has been impossible to obtain the machines at any price.

Besides the knitting machines, an essential machine in either the full-fashioned or the seamless industry is the looper, which is used in closing the toe of a seamless stocking and both the heel and toe of a full-fashioned. These machines are made in Germany and in the United States. Most manufacturers prefer the American model, as it is simpler in construction and easier to keep in good condition.

Hosiery mills are usually equipped with their own dyeing plants, the machinery for which, including boilers and hydro-extractors, requires the investment of considerable capital. The stockings are given final shape by boarding, a process which requires special equipment. One method uses thin, shaped, wooden boards over which the hosiery in a damp condition is stretched. A large oven or drier, in which the covered boards are stacked, is necessary. Some mills are equipped with hollow metal forms fastened upright along a table. Superheated steam passing through the forms dries the hosiery. One elaborate type of boarding machine is practically automatic; it strips the hose and lays them in piles of a given number.

Methods of production.—In most mills the product is standardized, each mill making only a limited number of styles in various grades and sizes. (Women's hose are usually made in sizes 8½ to 10. One mill which exports to the Orient makes sizes as small as 7.) The standard colors are black, white, and various shades of brown to match the prevailing color in shoes. Other colors are usually made only on special order. Fancy hose with clocking, embroidery, or openwork varies with the dictates of fashion but forms a small proportion of the entire trade.

Practically all machinery used in the hosiery industry is power driven. Most of the processes are mechanical, although handwork is still employed to some extent.

In the manufacture of full-fashioned hosiery the operation of two machines and an intermediary process of transferring are required for the actual knitting. The first machine knits the leg, the second the foot of the stocking. The legger is a long machine usually having 18 sections, on which 18 legs are knit simultaneously. The machine is set so as automatically to narrow the fabric by transferring two loops to a single needle at desired intervals. When the legs are finished, they are transferred to the footer, which has about 20 spaces. As it takes less time to complete the foot, three leggers are

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generally employed to one footer. The four machines, known as a "set," will produce about 180 dozen pairs of stockings a week. After the completion of the knitting the material is a shaped, selvaged piece, which is made into a stocking by seaming down the back of the leg and along the sole of the foot. The toe and heel are closed by "looping." This is done on a machine which produces a very flat join by stitching together a single loop at a time from each side of the seam.

For seamless hosiery the entire stocking is usually knit on one circular machine. Where ribbing is desired, the ribbed portion is knit on a machine of slightly smaller diameter than that which makes the plain. This gives greater elasticity to the ribbing. A machine can be used which will knit both the ribbed and the plain portions of the sock or stocking, but the product is not so satisfactory.

Except on the latest automatic machines the hems or welts of women's seamless hose must be turned by hand and sewed on power-sewing machines. Both the circular and the flat machines are built with different numbers of yarn changes. When a machine has several yarn changes, different kinds of yarn may be introduced into different parts of the stocking. This permits the use of cheap heavy yarns where the strain is great, and of fine yarn where the appearance of the stocking requires it.[3] When split-foot or double-soled socks or stockings are made, extra yarn is introduced. This is knit into the sole, but not into the upper part of the foot. As there is no provision in a circular machine for the yarn to be cut after each course, a web of loose threads on the inside of a split-foot seamless stocking must be cut out. In some mills this is done on a small upright machine over which the hose is slipped. The operative presses a lever and both ends of the thread are clipped at once. Where these machines are not used the threads are clipped by hand with shears.

Clocking, ornamental work on the ankle or side of a stocking, may be worked in the hose during the process of knitting by plating or in an openwork design, or it may be embroidered by hand or machine after the stocking is knit.

Plating is knitting with two yarns simultaneously, one yarn appearing on the face of the fabric and one on the reverse. A design may be achieved by using different materials or contrasting colors.

Besides the knitting there are many other operations on both full-fashioned and seamless hosiery—looping, turning, dyeing, boarding, pressing, inspecting, mending, stamping, labeling, and boxing—which necessitate the handling of the article many times.

Comparison of American and foreign processes.—The development of the hosiery industry in foreign countries has been almost entirely in the full-fashioned lines, the seamless industry receiving little attention until the shortage of German goods caused manufacturers in many countries, notably Japan, to become interested in rapid production and to import greater numbers of American circular hosiery machines.[3] Some circular hosiery machines are made in Germany, England, and France.

The same kinds of full-fashion machines are used in the United States as in other countries, and the processes are practically identical.

The method of making full-fashioned stockings in America is known as the French system. This is generally used on the Continent

[3] Dept. of Com. Misc. Series, No. 31, p. 182.

of Europe. The English system is somewhat different. It requires only one machine on which the sole is knit as a continuation of the upper part of the foot. The completed stocking has a seam down the back of the leg and a seam along each side of the foot instead of along the sole. There is no join at the toe. This process involves no transferring, but the seaming is more complicated.

Organization.—There is less homogeneity in the organization of the hosiery industry than in most industries of equal importance, inasmuch as large corporations constitute a smaller percentage of the total establishments. This is especially true of the seamless-hosiery industry where, because of the relative cheapness of the machinery, the simplicity of the operations, and the small space required for housing the equipment, a small mill can be operated at a profit. On the other hand, the degree of standardization in the industry, the possibility of quantity production, and the enormous market for cotton hosiery make the industry eminently adaptable to large scale operations. The full-fashioned industry requires the investment of more capital because of the greater cost of the machinery and the more careful finishing processes necessary on a superior grade of goods. Census figures for capital invested or equipment are not given in detail for the hosiery industry, but the statistics for knit goods as a whole bear out the above statements.

In 1914 there were 1,662 knit-goods establishments having a capitalization of $215,826,340; in 1919 there were 2,050 establishments with invested capital aggregating $516,457,991. In 1914 and 1919, respectively, the number of establishments owned by individuals was 519 and 564; by corporations, 785 and 1,096; owned otherwise, 318 and 390, respectively. Of the total output the value produced in establishments owned by individuals was 9 per cent in 1914 and 7 per cent in 1919; in establishments owned by corporations, 80.5 and 83 per cent; in establishments otherwise owned, 10.5 per cent and 10 per cent in 1914 and 1919, respectively. There is evidently a tendency in the knit-goods industry, as in most others, toward concentration in corporations. In 1909 only 71 per cent of the total output was that of corporations.

Where cotton hosiery is manufactured on a large scale, the industry has become highly integrated, every process from spinning the yarn to dyeing and finishing being done in the mill.

Considerable variety of material is used in some mills—cotton, silk, artificial silk, and to some extent, wool hosiery are frequently all made by the same establishment, but the type of product varies little. The following table shows that practically the entire output of cotton hosiery is by mills engaged primarily in the manufacture of hosiery:

TABLE 2.—*Production of cotton hosiery, by type of establishment.*

Made in—	Quantity.	Per cent of total of quantity.	Value.	Per cent of total of value.
	Dozen pairs.			
Hosiery mills	60,200,033	99.32	$152,283,092	99.21
Underwear mills	355,708	.58	969,485	.63
Fancy knit-goods mills	57,582	.10	244,883	.16
Knitted-cloth mills	19	.....	26	.....
Total	60,613,342	100.00	153,497,486	100.00

Hosiery knitting machines can not well be used for any thing hosiery. For this reason hosiery is a more or less specialized ind try. This is less true of silk hosiery which is sometimes made fr fabric knit in the piece.

Geographical distribution.—The hosiery industry, especially cotton-hosiery industry, is not localized. In practically every St east of the Mississippi, and in many States west thereof, there several hosiery mills. Pennsylvania holds first rank in quanti and value of the hosiery produced, but there has been a very notic able change from cotton to silk in that State. The production cotton hosiery in 1919 was smaller by almost 10,000,000 dozen pai than the production in 1909. Reading is the principal center of t cotton-hosiery industry, although small mills are scattered all ov the State. North Carolina, with an ever-increasing production, second in quantity, though exceeded by Tennessee in value of outpu Durham is one of the principal manufacturing centers in the forme State, and Chattanooga in the latter. Generally speaking, cheape grades of goods are made in the South than in the North, but som large mills in the South make the finest grades of seamless hosiery o the market, and recently the manufacture of full-fashioned hosier has been begun. There are distinctive economic reasons for thi condition. In the first place, the industry is much newer in the South. In one respect this is an advantage, as newly constructed mills can be equipped with the latest types of machinery. Circular machinery goes out of date rapidly, and northern mills have frequently made their replacements with full-fashioned machines. In the second place, labor conditions make it possible to produce cheap grades of hosiery which have become unprofitable in the North. Labor in the South is less well organized, and wages are lower than in the North. Hours of labor are longer, and overhead expense is therefore reduced.

What has been said of the South is to some extent true of the Northwest. The trend, however, is toward the manufacture of better grades of goods in the South, in hosiery as in other textiles. Mills in the Southeastern States are usually supplied with electricity generated by the abundant water power.

Relation of domestic production to consumption.—In 1919 production of cotton hosiery amounted to 60,613,342 dozen pairs; imports were 60,686 dozen pairs; exports, 7,454,203 dozen pairs. Domestic consumption was therefore equivalent to about 53,225,000 dozen pairs in that year. By similar calculation consumption in 1914 was about 63,000,000 dozen pairs. It is significant that the decrease in consumption was during a period when there were practically no imports (see pages 24 and 25), which shows that it was due to change in the character of demand, and not to foreign competition. Domestic manufacturers have ample capacity to supply the home demand and then have a surplus, as is shown by the enormous quantities exported during the last few years. (See page 31.) There is, in fact, great danger of overexpansion and overproduction in the industry.

Domestic exports.—American manufacturers of cotton hosiery have acquired a remarkable export trade in the last six years. Exports of cotton hosiery were not recorded separately prior to 1918 but in 1914 the exports of all cotton knit goods, including underwear,

hosiery, and miscellaneous articles, were valued at only $2,546,822, which was above the average for the preceding 6 years. In 1918 cotton hosiery alone amounted to $11,578,209, in 1919, $20,837,032; and in 1920, to $37,178,239. The large values were partly the result of higher prices, but the quantities, which are more indicative of the volume of trade, show that the United States was one of the foremost countries in foreign trade during those years. The markets acquired by domestic manufacturers are widely distributed; in fact, over 100 countries are listed in Commerce and Navigation Reports as receiving cotton hosiery from the United States. One mill, which has foreign representatives, has a large export business, making small sizes especially for the oriental, chiefly Indian, trade. Some American mills have their own sales offices which handle foreign trade; others sell through jobbers. Inquiries in the trade developed the fact that exports are largely of seamless hosiery.

The prime cause for this newly stimulated trade was, of course, the removal of Germany from the field of competition. Other factors have entered into the situation. The generally higher standard of living the world over has created a larger demand for hosiery. More direct shipping facilities have been provided between the United States and many foreign countries. Improved banking methods allow American manufacturers to extend more liberal credits, and the new contacts which the country at large has formed with foreign markets have been a benefit to hosiery manufacturers. The drop in exports for 1921 might at first glance seem to indicate that the export trade was somewhat transitory and that probably all foreign markets would soon be reabsorbed by German interests. There are, however, other causes for this falling off of exports. The general financial depression the world over has seriously reduced the buying power of most nations. Argentina and Cuba, with whom this country carried on a large trade, have both suffered financial embarrassments. Argentina received large stocks of American goods in 1920, which could not be absorbed, and consequently further orders were postponed. The same was, to a lesser degree, true of Cuba, and the moratorium which was declared in the fall of 1920 retarded trade for several months. Practically the only markets in which German competition seems to have been effective since the war have been neutral countries of western Europe whose exchange has suffered little or no depreciation—Sweden, the Netherlands, and Denmark.

FOREIGN PRODUCTION.

Germany.—Chemnitz, in Saxony, is the center of the German cotton-hosiery industry. The German industry is almost entirely in the full-fashioned line, with some of the cut-foot type of infants' socks previously mentioned. Prior to the war German labor costs were so low that they could compete even with the American seamless hose in foreign markets. The seamless hose is a less acceptable article and would have to undersell the full-fashioned to hold the trade. No accurate statistics of the output of the German industry are available, and reports as to present conditions are conflicting. Without a doubt the Germans have made a strong effort to regain their export markets, and they have had no little success, but the industry faces many difficulties. Wages, it is true, are very low in comparison

with American standards, and in terms of American money ar
low in comparison with pre-war German standards. But they c
from day to day; in fact, wage agreements are commonly ma
only one month. The unions have succeeded in maintainin
enforcement of an 8-hour day, regulations regarding the numb
machines worked, and other restrictions which operate to some
advantage to the manufacturer. "The growing tightness of m
and the rising rate for private discounts, together with the
conservative attitude of the banks toward industrial loans is and
unfavorable factor in the manufacturer's balance sheet."[4] T
are high, with special export taxes levied on all goods sent out of
country. The mills are not greatly handicapped by shortage of
and coke, because Chemnitz is fairly well supplied with electric pow
though on the whole there is less electrification of industry in Germa
than in the United States. It is a fact that the Germans are now a
to sell their hosiery at prices below those possible to the Americ
manufacturer, but it is a problem how long this condition can contin
as the stabilization of the mark, even at a much depreciated leve
would tend to bring about a readjustment of wages which would forc
German prices nearer to the American. The following table show
the comparison of pre-war and post-war exports from Germany ex
pressed in weight. They are therefore not comparable with American
figures.

TABLE 3.—*German exports of cotton hosiery.*

Shipped to—	January to December, 1913.	May, 1921, to April, 1922.[1]	January to December 1922.
	Pounds.	*Pounds.*	*Pounds.*
Saar Basin	.....	165,125	188,273
Belgium	281,307	486,555	589,289
Denmark	185,407	421,078	523,592
Alsace Lorraine	.....	[2] 2,205	2,205
France	491,405	187,611	238,538
United Kingdom	2,186,082	290,566	573,637
Italy	559,087	312,612	378,971
Netherlands	436,732	871,258	964,733
Austria	[2] 386,025	1,272,716	1,413,589
Sweden	139,551	302,692	398,812
Switzerland	294,755	411,378	375,443
Turkey	893,304	452,825	608,029
Egypt	484,571	218,917	276,898
Argentina	1,744,941	594,140	956,355
Chile	532,190	191,583	205,910
United States	2,917,788	912,925	954,592
Other countries	6,692,945	1,833,345	2,155,658
Total	18,226,090	8,927,528	10,804,524

[1] No statistics available for first four months of 1921.
[2] Austria-Hungary.

Some idea of the quantity in dozens may be gained when we consider that the weights of cotton hosiery run from about one-half pound a dozen for infants' socks to about 3 pounds for children's heavy ribbed hose. Imports under the emergency tariff act show an average in one period of slightly less than a pound per dozen, and in another period of slightly more than a pound per dozen. It is well known that these imports have been largely of infants' socks, and the average would probably be of lighter weight than the average

[4] Supplement to Commerce Reports. Trade Information Bulletin No. 48.

of the total German exports. The total exports from Germany in 1913, according to this calculation, would probably not have been much greater than the exports from the United States in 1920. It may be seen from this table that exports for the year ended April, 1922, were less than half those for the year ended December, 1913. In certain western European markets, as pointed out above, post-war exports were greater than pre-war exports.

France.—The French hosiery industry is of some importance and has been especially developed in fine goods. The average unit values of cotton hosiery imported into the United States from France are greater than from other countries. (See Table 6, p. 24.) Hosiery machinery is built in France, and special stress is there laid upon improvements which will result in higher quality of goods rather than in speed of production. Exports of hosiery are not separately stated in French statistics, but the weight of cotton knit wearing apparel exported from France was somewhat less in 1921 than in 1913; in fact, only in 1920 was there an important increase. French foreign trade in hosiery is probably greater than the British but far less than the German.

England.—Hosiery produced in the United Kingdom is more largely wool than cotton, but that the production of cotton hosiery has increased in several years is reflected by export figures as follows:

Calendar year:	Dozen pairs.
1913	721,967
1918	1,000,619
1919	1,513,379
1920	1,739,109
1921	489,394

The quantity exported in 1920 was less than one-sixth the quantity exported by the United States during the same period. Very little of the British goods was sent to South American countries, the bulk going to British possessions; American exports to these possessions, however, were in almost every instance greater than British.

Japan.—In the Japanese industrial movement the Japanese manufacturers naturally turned first to the simplest lines of manufacture. Thus American circular hosiery machines found a market in the Far East. This line offered a ready means of development when after 1914 German goods were difficult or impossible to obtain. American manufacturers of circular machines could not supply the machines desired by this trade during the last few years. Inquiries were also made by Japanese manufacturers for American full-fashion machines, but as late as August, 1920, none had been sold to that country, as the builders could not supply the domestic demand. It is probable that Japan is receiving German machines, as the machine manufacturers not being so seriously handicapped by lack of raw material, would profit by exporting at current rates of exchange.

The Japanese hosiery industry has not shown the same growth since 1914 as have other lines of knit goods, notably underwear. Considerable quantities of Japanese hosiery were exported, but the industry was soon affected by the depression in world trade. The majority of the hosiery manufacturers who started business during the period of war boom closed down in 1921.[5] The Japanese have

[5] British Board of Trade Journal, June 23, 1921, p. 710.

made a special effort to secure the trade of British India, and it is possible that they may succeed in that market to the exclusion of American and British goods. The quality of Japanese hosiery is so inferior that they have failed to gain a foothold in the American market and probably will not offer serious competition in many foreign markets. However, the Japanese Government by a rigid system of inspection is endeavoring to raise the standard of exports in this as in many other lines.

IMPORTS.

A comparison of import statistics with domestic production discloses extraordinary divergence. In the census years 1899, 1904, 1909, and 1914, cotton hosiery imports equaled 13, 10, 9, and 4 per cent, respectively, showing a steady decrease in the proportion of imports to production. Imports in 1919 were too small for comparison. There was an actual increase in imports from one-half decade to the next until 1909, but the imports did not keep pace with consumption, as is evinced by the diminishing ratios of imports to production. American mills turned out 61,409,575 dozen pairs of cotton hose and half hose in 1914, while imports for consumption totaled only 2,194,371 dozen pairs. The greatest quantity imported since 1891 was 5,921,503 dozen pairs in 1895, a low-tariff year, but this was probably swelled by holdovers in anticipation of a tariff reduction, as the figures for 1894 are much smaller than for the two preceding years. Impending tariff legislation with the probability of an upward revision would naturally have stimulated imports in 1921 and the first part of 1922. (See Tables 7 to 11, inclusive, pages 25 to 30.)

Imports by countries (Table 6, page 24), first stated by quantity in 1911, show that Germany was by far the most important source of foreign cotton hosiery coming into the United States, supplying 99 per cent in each of the first three years, 1911, 1912, and 1913; 98 per cent in 1914; 96 per cent in 1915; and as much as 68 per cent even in 1916. Subsequent imports from Germany were practically nothing until 1921 when they were again 96 per cent of the total.

English and French imports, according to their invoiced value, are of superior quality. For the years 1911 to 1914 the average unit value of German imports was $1.27 per dozen pairs, while the English was $2.78 per dozen pairs and the French $3.93. Japanese imports had an average value of 55 cents per dozen pairs in 1918, the only year in which any quantity came to this country. Unit values for the first quarter of 1922 were 96 cents for German goods, $5.47 for British, and $8.86 for French.

In order to obtain data in regard to the character of cotton hosiery imported the Tariff Commission sent an inquiry (August, 1922) to the appraiser at the port of New York, from whom it was learned that a smaller variety of cotton hosiery is imported now than before the war, largely because yarns are not available. Children's socks are now estimated to be about 10 to 15 per cent of the total imports; approximately 90 per cent of the children's socks are full-fashioned and 10 per cent cut with sewed feet. The cut socks have a selvaged

top knitted on a flat machine. Very little seamless hosiery is imported as it can not compete with the high efficiency in the manufacture and great output of the domestic article. It is estimated that 80 per cent are lisle and 20 per cent cotton. The usual gauges imported are 33, 36, 39, and 42. Extremes of price range were said to be difficult to quote because of varying conditions. They were estimated as follows:

	Value per dozen pairs.
Infants' cut hose	$0.55–$0.75
Infants' seamless hose	.90– 1.00
Infants' full-fashioned hose	1.10– 1.30
Infants' full-fashioned mercerized lisle socks	1.50– 1.75
Men's lisle half-hose	2.50– 3.25
Women's lisle hose	3.50– 5.00

Prices given are for usual grades; novelties and fancy goods would be higher.

Attention is called to the statement of the appraiser that as no statistics are compiled by his office the information given is largely estimated. It has been sustained by the largest importers of cotton hose at New York.

PRICES.

Grades of cotton hosiery are determined by so many elements—the quality of the yarn, the type of machine, the fineness of the mesh resulting from the gauge or number of needles, the method of reinforcing, the dyeing and finishing—that it is difficult to quote representative prices. In normal times hosiery prices undergo very little fluctuation, as the goods are scaled to sell at definite and unchanging retail prices—25 cents a pair, 35 cents a pair or three for a dollar, and so on. These levels could not be retained with the rise in costs of materials and labor. Once a radical departure from the old price standards had been made the element of speculation entered. This had the effect not only of increasing prices but of upsetting all price relations. It not infrequently happened that a low-grade hose commanded an equivalent or better price than a superior article.

The prices quoted in the War Industries Board bulletin (see page 73) are on popular-priced hosiery. Women's 33 gauge are about the coarsest full-fashioned hose made, and presumably would have sold for about 25 cents retail prior to 1914. Men's 176-needle hose, which are seamless, were made to sell for 10 cents a pair retail. Peak prices are not shown in this bulletin, as they were not reached until 1919 and the early part of 1920 when they soared to three or four times pre-war altitudes. Men's 176-needle hose were quoted at $2.50 per dozen pairs in July, 1920; six months later some were on the market for $1.

There has been a decided recession since 1920, but prices are still above the pre-war level.

The following extract from the Daily News Record of May 26, 1921, gives an idea of price trend during the last few years:

A decrease of 51 per cent in the cost of hosiery to the retailer as compared to the peak prices of 1920 is shown in a comparison of prices made available through reference to lists issued by the Durham Hosiery Mills. It was explained that the construction of some numbers had varied somewhat since pre-war times, but that the values are similar. The peak prices are those at which merchandise moved freely.

Between May 31, 1914, and May 31, 1920, the increase was 227 per cent, and the decline since 1920 is 51 per cent. These prices are the jobbers' prices to the retailers. The following prices indicate increases and decreases in price:

Name.	Price May 31, 1914.	Price May 31, 1920.	Per cent increase.	Price May, 1921.	Per cent increase since 1914.	Per cent decline since 1920.	Price July, 1922.[1]
Men's:							
Shoo Fly (work sock)	$0.79	$2.50	216	$1.12½	42	55	.....
Tar Heel (cotton)	.90	2.50	178	1.20	33	52	.....
Regimental (cotton)	.92½	3.00	224	1.35	46	55	.....
Bull Durham (cotton)	.95	3.25	242	1.70	79	48	.....
Ox Hide (cotton)	.95	3.25	242	1.85	94	43	.....
Clubman (combed)	1.25	3.90	212	2.00	60	49	.....
Craftsman (mercerized)	2.15	3.75	74	2.25	5	40	.....
Hiker (fleecy lined)	1.25	3.25	160	2.00	60	40	.....
Women's:							
Amazon (cotton)	.90	2.50	177	1.20	33	52	.....
Gloriana (combed)	1.25	4.25	240	1.90	52	55	$1.68
Juliana (cotton)	1.20	3.50	192	1.90	58	46	.....
Victory (cotton)	1.25	4.50	240	2.00	60	56	1.68
Miss Nancy (combed)	1.25	4.50	240	2.00	60	56	.....
Big Sister (combed)	1.25	5.00	300	2.10	68	58	.....
Kitty Hawk (combed)	1.25	4.50	240	2.00	60	56	.....
Queen Nan (combed)	1.25	4.75	280	2.10	68	56	1.80
Lady Ware (mercerized)	2.25	7.00	211	2.75	33	57	2.72
Snow Bird (fleecy lined)	1.15	4.00	248	2.75	139	31	.....
Alpine (fleecy lined)	1.25	4.25	240	2.85	128	33	.....
Snowbound (fleecy lined)	1.25	4.75	280	2.85	128	40	.....
Children's:							
Red Riding Hood (cotton)	.85	3.10	265	1.20	41	61	.....
Rover Lad (cotton)	1.00	3.50	250	1.70	70	51	.....
Polly Prim (combed cotton)	1.25	4.50	260	2.00	60	46	.....
Pathfinder, No. 1	1.25	4.50	260	1.85	48	59	.....
Pathfinder, No. 2	1.25	4.50	260	1.90	52	58	.....
Average	1.25	3.96	227	1.95	61	51	.....

[1] Furnished by the mill.

TARIFF HISTORY.

The tariff act of 1883 levied a flat rate of 40 per cent on all cotton hosiery other than "cut" hosiery. This was modified under the act of 1890 by breaking up the paragraph into value classifications dutiable at graded compound rates. The actual duties collected under this act averaged over 68 per cent of the invoice value. From 1891 to 1913 the rates on cotton hosiery were higher than on cotton goods in general. Though changes in classification and rates were made, the same system was adhered to. While the act of 1897 was in force larger quantities of cheap grades of hosiery were imported; this was counteracted in the act of 1909 by a raise in rates on the three classifications valued at less than $2 per dozen. Imports under the act of 1909 decreased. In 1908, 5,068,004 dozen pairs were imported; in 1913, only 2,028,988 dozen pairs.

The act of 1913 simplified that part of the schedule relating to hosiery by reducing the number of classifications from seven to four and by changing from a compound rate to an ad valorem rate only, ranging from 20 to 50 per cent. (See pages 32 and 33.)

The emergency tariff act of May 27, 1921, placed a compensatory duty of 7 cents a pound on all goods containing cotton with a staple of 1⅛ inches or over. This affected more than 50 per cent of the cotton hosiery imported in the first three months of 1922. It was equivalent to about 6 cents a dozen or an additional ad valorem of 4.27 per cent on the hosiery subject to the compensatory duty during the first quarter of 1922.

The act of 1922 abolished value classifications and levied a flat rate of 50 per cent ad valorem on all cotton hosiery other than cut hosiery, which was made dutiable at 30 per cent ad valorem.

COMPETITIVE CONDITIONS.

Conditions throughout the world have been so abnormal since the passage of the tariff act of 1913 that it is impossible to estimate what would have been the effect of the lower rates provided by that act if German trade had not been interrupted by the war. It is evident that the domestic hosiery industry as a whole has flourished both before and since 1914. The decrease in the production of cotton hosiery was in nowise the result of foreign competition, but of a change in the character of hosiery called for by the trade. Domestic competition is keen. There are many large mills with carefully built-up, well-financed organizations, but frequently the most telling competition is from small mills, having inadequate cost systems, that make their terms according to the market of the day. From 1916 to 1920 prices in general maintained such a high level, and manufacturing profits either were or appeared to be so alluring, that many men with some experience and a little capital undertook the manufacture of hosiery. Many of the concerns so formed have been unable to withstand the economic pressure of shrunken markets and the general business depression since 1920.

Wages in the knit-goods industry in this country show a tendency to decrease. The following tabulation gives the average weekly earnings in the cotton and woolen hosiery and knit-goods industries of New York State as compiled by the department of labor of that State and issued in their monthly industrial bulletin:

1922, June	$16.80
1921, June	18.50
1920, June	21.12
1918, April	14.38
1917, August	11.91
1916, June	10.23
1915, August	9.45
1914, August	8.68

There has been a decrease of about 38 per cent since 1921, though wages are still almost 100 per cent above the 1914 average. It must be borne in mind, however, that the more extensive production of fine goods calls for a greater proportion of skilled labor; a 100 per cent average wage increase therefore does not necessarily represent a 100 per cent increase in labor costs.

Germany in past years has been the only country sending any quantity of cotton hosiery into the United States, and even German imports, when compared with the output of the American industry as a whole, could hardly be considered competitive. The German product, full-fashioned hosiery, is superior to the American seamless, and will compete with it if sold at the same or a slightly higher price. A low labor cost has always been the determining factor in Germany's dominance of hosiery exports. No up-to-date figures for German wages are available: undoubtedly they are lower than the American, but constantly changing conditions make comparisons valueless. The German industry (1922), while apparently

making great strides toward the recovery of its normal efficiency, is beset by many difficulties. The position of labor since the revolution is stronger than during the old régime. The power of the unions has forced unemployment legislation, the 8-hour day and other industrial regulations which make labor costs in relation to wages greater than before the war. Wages are still very low, in some cases lower than in 1914 when the depreciated value of the mark is taken into consideration. The unions have obtained frequent raises in wages, but these have not counteracted the effect of the falling exchange. Apparently there has been no scarcity of labor such as might have been expected after the war.[6] Immediately after the war American manufacturers had some advantage in the facility of obtaining raw material, but this is hardly true at the present time because the German hosiery mills have a fairly active export trade and their capital is quickly released for reinvestment in raw materials. Fine cotton yarn which they get from England bears an import duty but this duty is merely nominal, amounting on the finest yarns at present rates of exchange (August 11, 1922) to a little over 1 cent per pound in comparison with an ad valorem duty of 27½ per cent on the finest yarns imported into the United States.[7] For this reason English yarns are cheaper in Germany than in the United States. The Germans import their fine yarns and probably will continue to do so in even larger quantities, because two of the largest spinning mills have been bought by linen interests and will no longer be used to spin cotton yarn. American manufacturers are becoming rather more than less independent in this regard, as finer yarns are being spun in the United States.

In Germany the hosiery industry, as is practically every other, is handicapped by the coal shortage. This has been occasioned by deliveries to the Entente, loss of mines in territorial readjustments, inadequate transportation facilities, and lack of capital for new undertakings.[8] The coal situation in the United States may occasion some shortage and increase in fuel costs, but the condition seems more temporary than in Germany.

Apparently, German industry is not on a very sound basis. The fluctuation of the mark tends to increase the export trade by introducing an element of speculation, but this can not result in permanent advantage to the German manufacturer. Stabilization of the currency would cause a narrower margin between prices in Germany and elsewhere. German manufacturers will probably continue to have some advantage in goods requiring a large proportion of labor, such as the infants' socks made with tops in Jacquard design.

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[6] Metzner, Dr. Max, secretary cotton industry section of Federal Council of German Industry, Textile World Journal, Nov. 19, 1921.

[7] Kelly's Customs Tariffs of the World, 1923. The duties were raised by a 40 per cent April, 1922, or 6,000 paper marks, considered the equivalent of 100 gold marks. With the mark at par, duty under the unrevised tariff would have been about 1 cents per pound.

[8] Supplement to Commerce Reports. Trade Information Bulletin No. 18. C. E. Herring, commercial attaché, Berlin.

STATISTICAL TABLES.

TABLE 4.—*Cotton hosiery—Total production in United States.*

[From Federal Census.]

Year.	Hose.		Half hose.		Total.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Dozen pairs.		*Dozen pairs.*		*Dozen pairs.*	
1899	15,026,173	$13,275,732	11,352,081	$7,906,945	26,380,254	$21,182,677
1904	24,169,804	22,764,799	15,223,243	11,821,830	39,393,047	34,586,629
1909	32,499,104	34,078,622	24,805,917	21,831,365	57,305,021	55,909,987
1914	36,952,380	38,390,194	24,457,195	21,241,280	61,409,575	59,631,474
1919	36,835,602	105,647,876	23,777,740	47,849,610	60,613,342	153,497,486

TABLE 5.—*Cotton hosiery—Production in United States, by States.*

[From Federal Census.]

State.	1899		1904		1909	
	Quantity.	Value.	Quantity.	Value.[1]	Quantity.	Value.
	Dozen pairs.		*Dozen pairs.*		*Dozen pairs.*	
Pennsylvania	14,858,506	$12,466,182	19,707,227	.....	27,139,582	$28,697,548
North Carolina	1,069,431	777,305	2,928,032	.....	5,806,140	4,100,689
Tennessee	513,500	338,150	[2]	.....	3,267,156	[2]
Wisconsin	347,387	380,672	1,449,096	.....	2,042,952	2,935,926
Illinois	1,662,150	990,056	1,861,140	.....	3,069,634	2,914,121
Massachusetts	2,255,341	1,705,941	2,556,261	.....	4,280,266	3,734,618
Georgia	1,194,772	751,668	1,880,495	.....	3,726,330	2,389,012
Virginia	356,800	290,200	561,484	.....	715,807	522,282
New Hampshire	[2]	967,740	1,043,153	.....	1,186,912	984,243
South Carolina	726,750	385,687	[2]	.....	855,431	[2]
Maryland	199,149	170,553	[2]	.....	825,921	[2]
Delaware	490,845	316,756	[2]	.....	661,104	[2]
New Jersey	757,836	642,927	1,090,511	.....	752,452	735,731
Alabama	[2]	[2]	[2]	.....	373,500	[2]
All other	1,848,784	998,840	6,315,648	.....	[3] 2,601,834	[3] 8,895,817
Total	26,380,254	21,182,677	39,393,047	$34,586,629	57,305,021	55,909,987

State.	1914		1919	
	Quantity.	Value.	Quantity.	Value.
	Dozen pairs.		*Dozen pairs.*	
Pennsylvania	23,383,766	$23,209,500	17,722,549	$44,132,833
North Carolina	8,746,982	6,204,477	9,431,825	19,256,273
Tennessee	5,426,052	5,077,710	8,643,319	20,759,258
Wisconsin	2,567,571	4,370,689	3,654,564	17,707,337
Illinois	3,686,091	3,900,131	4,484,480	10,635,100
Massachusetts	3,791,779	3,540,884	1,990,075	5,025,585
Georgia	4,651,961	3,418,548	4,967,042	9,704,848
Virginia	1,524,174	1,075,535	1,387,716	2,228,067
New Hampshire	1,034,358	970,589	657,326	1,538,716
South Carolina	983,871	741,487	1,012,533	2,001,784
Maryland	669,054	559,824	783,681	1,718,315
Delaware	693,416	505,603	206,120	350,757
New Jersey	364,497	468,880	1,175,459	2,758,786
Alabama	586,334	426,010	1,108,379	2,732,369
All other	3,298,759	5,161,542	3,387,674	12,947,458
Total	61,409,575	59,631,474	60,613,342	153,497,486

[1] Not given by States.
[2] Included in "All other."
[3] As quantity statistics are given in greater detail than value, it is evident that the quantity and value of "All other" do not correspond.

Table 6. Cotton hosiery—Imports by countries.

[Fiscal years.]

Imported from—	1909		1911		1912	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
			Dozen pairs.		*Dozen pairs.*	
Germany	$5,705,073	2,714,772	$3,538,582	2,702,505	$2,713,813	
United Kingdom	45,879	12,623	40,089	13,763	40,425	
France	56,214	5,934	30,484	6,572	28,952	
Spain	6,148	3,520	4,044	3,409	1,739	
Austria-Hungary	78	209	340	495	881	
Mexico	457	1,019	1,035	337	208	
Japan	812	97	62	7	11	
All other countries	750	288	507	160	285	
Total	5,915,403	2,731,477	3,615,153	2,227,249	2,786,168	

Imported from—	1913		1914		1915	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Dozen pairs.		*Dozen pairs.*		*Dozen pairs.*	
Germany	2,121,678	$2,631,218	2,375,494	$3,050,939	1,252,538	$1,417,124
United Kingdom	14,462	41,844	17,604	43,666	14,601	35,646
France	7,287	30,135	8,977	35,683	5,171	19,248
Spain	687	355	12,364	6,068	7,316	4,037
Austria-Hungary	90	53	3,784	6,595	43	31
Mexico	2	5	922	1,369	12,545	12,605
Japan	4	6	14	24	1,467	1,027
All other countries	131	148	242	301	6,926	7,063
Total	2,154,441	2,703,844	2,419,401	3,144,645	1,300,507	1,496,781

Imported from—	1916		1917		1918	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Dozen pairs.		*Dozen pairs.*		*Dozen pairs.*	
Germany	50,952	$74,528	536	$363		
United Kingdom	16,320	49,273	22,567	72,742	17,358	$73,178
France	3,235	21,431	3,470	21,818	2,398	20,380
Spain	3,509	2,232	2,158	1,717	1,837	1,404
Mexico	268	331				
Japan	313	303	2,702	1,431	104,293	57,041
All other countries	181	184	136	281	21	49
Total	74,778	148,252	31,038	98,372	125,807	152,052

Imported from	1919		1920	
	Quantity.	Value.	Quantity.	Value.
	Dozen pairs.		*Dozen pairs.*	
Germany			13,706	$37,902
United Kingdom	15,007	$65,504	39,136	127,168
France	807	3,344	8,248	31,716
Spain	5,606	2,034	587	1,605
Japan	30,473	30,830	32,609	20,068
All other countries	53	143	1,170	5,607
Total	51,145	130,854	80,439	224,066

TABLE 6.—*Cotton hosiery—Imports by countries*—Continued.

[Calendar years.]

Imported from—	1920		1921		Jan. 1 to Sept. 21, 1922.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Dozen pairs.		*Dozen pairs.*		*Dozen pairs.*	
Germany	168,114	$628,085	725,347	$1,172,424	1,120,313	$1,548,954
United Kingdom	41,636	216,509	15,152	105,800	21,582	139,006
France	4,762	44,220	7,051	66,885	3,790	36,058
Spain	450	1,387	181	829	19	95
Japan	10,650	7,889	1,254	1,069	757	1,136
Czechoslovakia	800	918	2,090	1,130	658	1,302
All other countries	1,873	9,821	4,953	10,297	4,380	7,415
Total	228,285	908,829	756,028	1,358,434	1,151,499	1,733,966

TABLE 7.—*Cotton hosiery—Total imports for consumption—Revenue.*

	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:	*Dozen pairs.*				*Per cent.*
1891	2,627,098	[1]$5,648,878	[1]$3,250,237	$2.15	57.54
1892	4,893,840	5,176,537	3,567,445	1.06	68.92
1893	5,365,029	5,752,710	3,953,614	1.07	68.73
1894	2,476,936	3,670,858	2,513,161	1.06	68.46
1895	5,921,503	6,135,777	3,113,740	1.04	50.75
1896	5,215,281	5,623,737	2,808,169	1.08	49.93
1897	5,402,180	5,491,061	2,744,425	1.02	49.98
1898	3,100,832	3,583,331	2,258,662	1.16	63.03
1899	3,328,209	3,895,911	2,489,785	1.17	63.91
1900	3,488,106	4,207,755	2,658,213	1.21	63.17
1901	3,519,723	4,799,106	2,885,185	1.36	60.12
1902	3,519,925	4,786,413	2,882,266	1.36	60.22
1903	3,814,058	5,247,383	3,149,861	1.38	60.03
1904	4,119,784	5,430,914	3,264,088	1.32	60.10
1905	4,232,031	5,431,063	3,287,522	1.28	60.53
1906	4,690,759	6,119,196	3,675,230	1.30	60.06
1907	5,128,730	7,035,398	4,138,742	1.37	58.83
1908	4,829,125	6,855,080	3,994,827	1.42	58.28
1909	5,068,004	6,390,923	3,860,419	1.26	60.40
1910	4,477,783	5,825,100	4,141,689	1.30	71.10
1911	2,933,129	3,824,970	2,803,950	1.30	73.31
1912	2,349,663	2,912,430	2,116,086	1.24	72.66
1913	2,028,988	2,553,928	1,792,592	1.26	70.19
1914	2,194,371	2,949,678	1,407,112	1.34	47.70
1915	1,364,757	1,705,347	747,151	1.25	43.81
1916	218,760	368,765	175,284	1.69	47.53
1917	63,584	147,281	71,581	2.32	48.60
1918	117,056	142,136	60,521	1.21	42.58
1919	60,686	120,282	53,472	1.98	44.46
1920	75,283	193,802	91,789	2.57	47.36
Annual average	3,220,840	4,067,525	2,465,227	1.26	60.61
Calendar year:					
1920	154,337	656,543	320,976	4.25	48.89
1921 [2]	703,884	1,414,210	678,529	2.01	47.98
1922 [3] (Jan. 1 to Sept. 21)	1,096,490	1,601,453	749,227	1.46	46.78

[1] Includes hosiery (quantity not given) valued at $2,158,398.22 on which $862,626.89 duty was assessed.
[2] Includes 265,254 dozens, equivalent to 278,513 pounds, valued at $604,940, imported under the emergency tariff act of May 27, 1921.
[3] Includes 243,659 dozens, equivalent to 210,315 pounds, valued at $344,575, imported under the emergency tariff act of May 27, 1921.

TABLE 8.—*Cotton hosiery—"Cut"—Imports for consumption—Revenue.*

[Par. 919.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:		*Dozen pairs.*				*Per cent.*
1891 [1]	35 per cent	[illegible]	$[illegible]	$[illegible]	$[illegible]	35.00
1892	do	144,289	[illegible]	[illegible]	.570	35.00
1893	do	101,082	[illegible]	[illegible]	.[illegible]	35.00
1894	do	69,184	[illegible]	[illegible]	.[illegible]	35.00
1895	do	4,[illegible]	[illegible]	[illegible]	.[illegible]	35.00
1895	20 per cent	56,012	[illegible]	11,[illegible]	.420	20.00
1896	do	[illegible]	[illegible]	[illegible]	.[illegible]	20.00
1897	do	12,927	[illegible]	[illegible]	.440	20.00
1898	do	20,736	16,[illegible]	4,876	.784	20.00
1899	do	21,055	13,038	3,911	.619	20.00
1900	do	8,619	[illegible]	1,[illegible]	.[illegible]	20.00
1901	do	6,966	3,039	911	.436	20.00
1902	do	23,191	11,485	3,445	.495	20.00
1903	do	22,958	10,126	3,037	.441	20.00
1904	do	22,213	7,925	2,377	.357	20.00
1905	do	14,159	[illegible]	2,140	.304	20.00
1906	do	31,436	15,619	4,685	.497	20.00
1907	do	27,140	16,001	4,800	.589	20.00
1908	do	25,789	18,090	5,427	.711	20.00
1909	do	23,953	16,947	5,084	.706	20.00
1910	do	134,890	[illegible]	23,514	.561	20.00
1911	do	229,046	128,500	38,552	.561	20.00
1912	do	318,743	174,[illegible]	[illegible]	.546	20.00
1913	do	350,658	178,264	53,479	.506	20.00
1914	do	13,212	[illegible]	2,548	.643	20.00
1914	20 per cent	334,290	170,402	34,080	.510	20.00
1915	do	244,092	124,231	24,846	.508	20.00
1916	do	9,944	4,881	976	.490	20.00
1917	do	4,922	2,731	546	.554	20.00
1918	do	6,903	3,752	750	.543	20.00
1919	do	18,192	12,723	2,544	.699	20.00
1920	do	1,248	1,693	338	1.360	20.00
Calendar year:						
1920	do	14,506	16,411	3,282	1.131	20.00
1921	do	162,233	97,860	19,572	.603	20.00
1921 [2]	20 per cent plus 7 cents per pound.	17,594	16,450	3,917	.935	23.81
1922 (Jan. 1 to Sept. 21).	20 per cent	246,809	144,951	28,990	.587	20.00
1922 (Jan. 1 to Sept. 21).	20 per cent plus 7 cents per pound.	[3] 13,166	8,104	2,056	.615	25.37

[1] From Oct. 6, 1890, to June 30, 1891.
[2] Under emergency tariff act of May 27, 1921; quantity equivalent to 8,961 pounds.
[3] Equivalent to 6,219 pounds.

TABLE 9.—*Cotton hosiery—Fashioned or seamless—Imports for consumption—Revenue.*

[Acts of 1890 and 1894.]

VALUED AT NOT MORE THAN 60 CENTS PER DOZEN PAIRS.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Dozen pairs.				*per cent.*
1891 [1]	20 cents per dozen plus 20 per cent.	187,600	$108,476	$59,215	$0.58	54.59
1892	do	1,238,367	723,150	392,304	.58	54.25
1893	do	1,343,998	786,152	426,030	.59	54.19
1894	do	941,387	551,540	298,586	.59	54.14
1895 [2]	do	156,695	90,889	49,517	.58	54.48

VALUED AT MORE THAN 60 CENTS AND NOT MORE THAN $2 PER DOZEN PAIRS.

1891 [1]	30 cents per dozen plus 30 per cent.	2,181,708	$2,699,352	$1,900,690	$1.24	70.41
1892	do	3,371,003	3,962,716	2,874,316	1.17	72.53
1893	do	3,786,115	4,511,017	3,241,363	1.19	71.97
1894	do	2,390,092	2,853,817	2,051,192	1.19	71.88
1895 [2]	do	175,835	195,199	146,487	1.11	75.08

[1] From Oct. 6, 1890, to June 30, 1891.
[2] From July 1, 1894, to Aug. 27, 1894.

TABLE 9.—*Cotton hosiery—Fashioned or seamless—Imports for consumption—Revenue*—Continued.

VALUED AT MORE THAN $2 AND NOT MORE THAN $4 PER DOZEN PAIRS.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Dozen pairs.				*Per cent.*
1891 [1]	75 cents per dozen plus 40 per cent.	191,363	$485,428	$337,694	$2.54	69.57
1892	....do	126,009	327,627	225,558	2.60	68.85
1893	....do	117,222	319,247	215,615	2.72	67.54
1894	....do	68,925	184,446	125,473	2.68	68.03
1895 [2]	....do	2,429	6,761	4,526	2.78	66.90

VALUED AT MORE THAN $4 PER DOZEN PAIRS.

1891 [1]	$1 per dozen plus 40 per cent.	16,610	$87,468	$51,597	$5.27	58.99
1892	....do	14,163	80,785	46,477	5.70	57.53
1893	....do	13,092	78,226	44,382	6.01	56.74
1894	....do	7,345	43,939	24,921	5.98	56.72
1895 [2]	....do	295	1,970	1,083	6.68	54.97

OF ALL VALUES.[3]

[Act of 1894.]

1895 [4]	50 per cent	5,485,368	$5,798,551	$2,899,276	$1.07	50.00
1896	....do	5,181,506	5,605,241	2,802,621	1.08	50.00
1897	....do	5,387,960	5,483,995	2,741,998	1.02	50.00
1898 [5]	....do	326,075	337,678	168,839	1.04	50.00

[1] From Oct. 6, 1890, to June 30, 1891.
[2] From July 1, 1894, to Aug. 27, 1894.
[3] One classification only for fashioned and seamless hose.
[4] From Aug. 27, 1894, to June 30, 1895.
[5] From July 1 to July 24, 1897.

TABLE 10.—*Cotton hosiery—Fashioned or seamless—Imports for consumption—Revenue.*

[Acts of 1897 and 1909.]

VALUED AT NOT MORE THAN $1 PER DOZEN PAIRS.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Dozen pairs.				*Per cent.*
1898 [1]	50 cents per dozen plus 15 per cent.	1,729,160	$1,533,152	$1,094,552	$0.887	71.40
1899	....do	2,115,098	1,922,589	1,345,938	.909	70.01
1900	....do	2,138,003	1,977,320	1,365,599	.925	69.06
1901	....do	1,642,888	1,576,356	1,057,898	.959	67.11
1902	....do	1,841,672	1,749,592	1,183,275	.949	67.63
1903	....do	1,992,685	1,893,047	1,280,299	.949	67.63
1904	....do	2,231,380	2,142,013	1,436,992	.959	67.09
1905	....do	2,342,901	2,236,114	1,506,867	.954	67.39
1906	....do	2,501,678	2,342,844	1,602,266	.936	68.39
1907	....do	2,449,277	2,350,249	1,577,176	.959	67.11
1908	....do	1,879,988	1,817,304	1,212,590	.967	66.72
1909	....do	2,914,982	2,777,714	1,874,148	.953	67.47
1910	....do	628,801	599,304	404,305	.953	67.47
1910	70 cents per dozen plus 15 per cent.	1,417,574	1,301,755	1,187,565	.918	91.23
1911	....do	1,091,484	986,841	912,065	.904	92.42
1912	....do	846,685	754,704	705,885	.891	93.53
1913	....do	640,792	572,397	534,414	.893	93.36
1914 [2]	....do	60,310	55,320	50,515	.917	91.31

[1] From July 24, 1897, to June 30, 1898.
[2] From July 1, to October 3, 1913.

[illegible]

TABLE 10.—*Cotton hosiery—Fashioned or seamless—Imports for consumption—Revenue*—Continued.

VALUED AT MORE THAN $2 AND NOT MORE THAN $3 PER DOZEN PAIRS.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Dozen pairs.				*Per cent.*
1898 [1]	$1.20 per dozen plus 15 per cent.	66,413	$168,970	$105,040	$2.54	62.16
1899	do	72,956	187,075	115,610	2.56	61.80
1900	do	82,223	215,556	131,001	2.62	60.77
1901	do	118,128	317,152	189,328	2.68	59.69
1902	do	144,533	388,780	231,757	2.69	59.61
1903	do	165,332	450,837	266,024	2.73	59.01
1904	do	108,630	292,741	174,267	2.69	59.52
1905	do	90,961	244,982	145,901	2.69	59.56
1906	do	107,541	288,184	172,277	2.68	59.78
1907	do	131,433	354,188	210,848	2.69	59.53
1908	do	111,282	291,829	177,313	2.62	60.75
1909	do	58,314	153,215	92,960	2.63	60.67
1910	do	65,226	173,516	104,299	2.66	60.11
1911	do	48,336	123,806	76,574	2.56	61.85
1912	do	26,869	69,828	42,717	2.60	61.17
1913	do	25,682	67,090	40,881	2.62	60.94
1914 [2]	do	3,714	9,622	5,900	2.59	61.32

VALUED AT MORE THAN $3 AND NOT MORE THAN $5 PER DOZEN PAIRS.

1898 [1]	$2 per dozen plus 15 per cent.	22,329	$87,224	$57,736	$3.90	66.19
1899	do	21,102	81,493	54,429	3.86	66.79
1900	do	22,765	88,794	58,850	3.90	66.28
1901	do	33,041	133,935	86,173	4.05	64.33
1902	do	38,605	153,806	100,282	3.98	65.20
1903	do	45,376	181,232	117,937	3.99	65.08
1904	do	32,574	132,395	85,008	4.06	64.21
1905	do	22,508	89,380	58,423	3.97	65.36
1906	do	26,134	104,013	67,871	3.98	65.26
1907	do	28,578	114,625	74,349	4.01	64.86
1908	do	34,214	132,716	88,336	3.88	66.56
1909	do	14,951	58,087	38,615	3.89	66.48
1910	do	14,807	57,727	38,273	3.90	66.30
1911	do	10,608	40,483	27,289	3.82	67.41
1912	do	7,234	28,628	18,763	3.96	65.54
1913	do	6,712	26,325	17,373	3.92	65.99
1914 [2]	do	998	3,985	2,595	3.99	65.13

VALUED AT MORE THAN $5 PER DOZEN PAIRS.

1898 [1]	55 per cent	8,230	$51,935	$28,554	$6.31	55.00
1899	do	8,521	57,924	31,858	6.80	55.00
1900	do	11,270	74,580	41,019	6.62	55.00
1901	do	17,084	100,618	55,340	5.89	55.00
1902	do	17,917	109,893	60,442	6.13	55.00
1903	do	17,622	116,336	63,985	6.60	55.00
1904	do	10,757	70,566	38,811	6.54	55.00
1905	do	4,237	28,997	15,948	6.84	55.00
1906	do	5,784	40,009	22,005	6.92	55.00
1907	do	6,379	42,356	23,295	6.64	55.00
1908	do	6,428	41,703	22,936	6.49	55.00
1909	do	3,993	27,969	15,383	7.00	55.00
1910	do	4,680	31,337	17,235	6.69	55.00
1911	do	3,134	22,173	12,195	7.07	55.00
1912	do	3,183	23,228	12,775	7.20	55.00
1913	do	3,345	23,667	13,016	7.07	55.00
1914 [2]	do	701	4,984	2,741	7.10	55.00

[1] From July 24, 1897, to June 30, 1898.

[2] From July 1, 1913, to Oct. 3, 1913

TABLE 11.—*Cotton hosiery—Fashioned or seamless—Imports for consumption—Revenue.*

[Act of 1913.]

VALUED AT NOT MORE THAN 70 CENTS PER DOZEN PAIRS.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Dozen pairs.				*Per cent.*
Fiscal year:						
1914 [1]	30 per cent	143,607	$90,562	$27,168	$0.63	30.00
1915	do	140,286	89,212	26,763	.64	30.00
1916	do	9,744	5,773	1,731	.59	30.00
1917	do	1,368	851	255	.62	30.00
1918	do	89,399	47,035	14,110	.53	30.00
1919	do	24,555	13,412	4,024	.55	30.00
1920	do	32,267	16,781	5,034	.52	30.00
Calendar year:						
1920	do	9,662	5,207	1,562	.54	30.00
1921	do	31,324	17,300	5,190	.55	30.00
1921 [2]	30 per cent plus 7 cents per pound.	[3] 21,184	10,957	4,198	.52	38.31
1922 (Jan. 1 to Sept. 21).	30 per cent	145,018	68,751	20,625	.47	30.00
1922 (Jan. 1 to Sept. 21). [2]	30 per cent plus 7 cents per pound.	[4] 88,643	48,673	17,351	.55	35.65

VALUED AT MORE THAN 70 CENTS AND NOT MORE THAN $1.20 PER DOZEN PAIRS.

Fiscal year:						
1914 [1]	40 per cent	675,498	$690,130	$276,052	$1.02	40.00
1915	do	434,498	504,107	201,642	1.16	40.00
1916	do	57,589	64,796	25,918	1.12	40.00
1917	do	8,787	10,699	4,279	1.21	40.00
1918	do	137	134	53	.97	40.00
1919	do	2,036	1,697	678	.83	40.00
1920	do	11,704	12,462	4,984	1.06	40.00
Calendar year:						
1920	do	12,435	13,096	5,238	1.05	40.00
1921	do	46,093	43,960	17,584	.95	40.00
1921 [2]	40 per cent plus 7 cents per pound.	[5] 37,702	37,313	17,370	.99	46.55
1922 (Jan. 1 to Sept. 21).	40 per cent	60,605	56,649	22,660	.93	40.00
1922 (Jan. 1 to Sept. 21). [2]	40 per cent plus 7 cents per pound.	[6] 111,102	108,685	50,227	.98	46.21

VALUED AT MORE THAN $1.20 PER DOZEN PAIRS.

Fiscal year:						
1914 [1]	50 per cent	787,079	$1,610,206	$805,103	$2.05	50.00
1915	do	545,900	987,796	493,898	1.80	50.00
1916	do	141,482	293,312	146,656	2.07	50.00
1917	do	48,507	133,000	66,500	2.74	50.00
1918	do	20,616	91,209	45,604	4.42	50.00
1919	do	15,903	92,449	46,224	5.81	50.00
1920	do	30,064	162,866	81,433	5.42	50.00
Calendar year:						
1920	do	117,734	621,829	310,914	5.28	50.00
1921	do	198,980	650,150	325,075	3.37	50.00
1921 [2]	50 per cent plus 7 cents per pound.	[7] 188,774	540,220	285,623	2.86	52.87
1922 (Jan. 1 to Sept. 21).	50 per cent	93,298	235,218	117,609	2.52	50.00
1922 (Jan. 1 to Sept. 21). [2]	50 per cent plus 7 cents per pound.	[8] 337,849	930,422	489,708	2.75	52.63

[1] From Oct. 3, 1913, to June 30, 1914.
[2] Under emergency tariff act of May 27, 1921.
[3] Equivalent to 13,017 pounds.
[4] Equivalent to 39,278 pounds.
[5] Equivalent to 34,919 pounds.
[6] Equivalent to 96,474 pounds.
[7] Equivalent to 221,616 pounds.
[8] Equivalent to 349,955 pounds.

TABLE 12.—*Cotton hosiery*[1]*—Domestic exports.*

[Fiscal years.]

Exported to—	1918		1919		1920	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Dozen pairs.		*Dozen pairs.*		*Dozen pairs.*	
Argentina	1,133,640	$2,514,162	1,210,027	$3,412,224	568,016	$1,987,768
United Kingdom	706,702	1,755,607	720,516	2,525,370	2,819,343	9,257,148
Australia	301,825	671,739	939,766	2,501,961	669,427	1,793,620
Denmark	26,743	46,838	751,247	2,003,297	939,625	2,682,864
Cuba	1,088,241	1,853,898	746,621	1,828,631	999,026	3,006,770
Canada	581,963	1,002,169	444,597	964,741	448,680	1,201,831
Chile	261,114	519,173	267,111	767,414	145,468	401,440
Uruguay	161,127	287,696	241,136	611,209	134,245	410,257
British South Africa	131,432	300,205	160,986	525,657	184,199	558,238
Mexico	217,041	417,476	157,436	427,888	135,674	426,547
New Zealand	31,960	81,580	91,476	293,141	28,888	115,767
Peru	60,572	110,888	80,826	198,992	178,475	423,585
France	101,098	253,616	31,578	88,928	941,054	2,750,654
All other countries	860,643	1,763,162	1,610,880	4,687,579	4,200,815	12,161,750
Total	5,664,101	11,578,209	7,454,203	20,837,032	12,392,935	37,178,239

[1] Not separately stated prior to 1918.

[Calendar years.]

Exported to—	1920		1921		First quarter, 1922.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Dozen pairs.		*Dozen pairs.*		*Dozen pairs.*	
Argentina	501,857	$2,213,633	340,845	$969,988	526,994	$1,352,906
United Kingdom	2,251,711	8,242,580	564,476	1,792,203	789,264	1,762,735
Australia	1,283,170	3,539,562	140,440	334,367	128,475	241,712
Denmark	293,943	1,013,612	36,362	132,279	13,551	31,796
Cuba	1,320,746	4,633,222	175,827	349,314	646,659	831,225
Canada	309,343	864,372	272,365	443,143	398,805	582,783
Chile	317,803	978,512	30,322	85,161	19,435	51,890
Uruguay	196,628	604,924	22,129	72,696	115,533	202,835
British South Africa	237,232	758,576	40,644	104,922	44,304	78,849
Mexico	132,609	483,887	181,083	481,708	108,855	288,458
New Zealand	71,448	261,371	12,239	39,532	8,693	23,401
Peru	239,093	646,876	30,923	64,247	40,377	61,748
France	905,817	2,685,521	16,121	52,771	47,952	133,665
All other countries	3,514,255	10,953,017	644,482	1,309,867	591,696	971,431
Total	11,575,655	37,879,665	2,508,258	6,232,198	3,480,593	6,615,434

TABLE 13.—*Cotton hosiery—Wholesale prices.*

[From War Industries Board Price Bulletin No. 23.]

Year.	Women's full-fashioned hose, 33-gauge, 12-pound.	Men's half hose, 176-needle.	Year.	Women's full-fashioned hose, 33-gauge, 12-pound.	Men's half hose, 176-needle.
	Per dozen.			*Per dozen.*	
1913	$1.8500	$0.8458	1916	$2.1667	$0.9646
1914	1.8460	.8063	1917	2.6000	1.4000
1915	1.8375	.7875	1918	3.8542	1.8750

TABLE 14.—*Cotton hosiery—"Cut"—Rates of duty.*

Act of—	Par.	Tariff classification or description.	Rate of duty.
1883	322	On stockings, hose, half-hose, * * * made on knitting machines or frames, composed wholly of cotton, and not herein otherwise provided for.	35 per centum ad valorem.
1890	352	Stockings, hose and half-hose, made on knitting machines or frames, composed of cotton or other vegetable fiber and not otherwise specially provided for * * *	Do.
1894	251	Stockings, hose and half-hose, made on knitting machines or frames, composed of cotton or other vegetable fiber and not otherwise specially provided for.	30 per centum ad valorem.
1897	317	Stockings, hose and half-hose, made on knitting machines or frames, composed of cotton or other vegetable fiber, and not otherwise specially provided for * * *	Do.
1909	327	Stockings, hose and half-hose, made on knitting machines or frames, composed of cotton or other vegetable fiber, and not otherwise specially provided for in this section.	Do.
1913	259	Stockings, hose and half-hose, made on knitting machines or frames, composed of cotton or other vegetable fiber, and not otherwise specially provided for in this section.	20 per centum ad valorem.
1922	916	* * * Hose and half-hose, finished or unfinished, made or cut from knitted fabric composed of cotton or other vegetable fiber, and not specially provided for.	30 per centum ad valorem.

Cotton hosiery, fashioned or seamless—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1883	323	On stockings, hose, half-hose * * * fashioned, narrowed, or shaped wholly or in part by knitting machines or frames, or knit by hand, and composed wholly of cotton.	40 per centum ad valorem.
1890	353	Stockings, hose, and half-hose, selvedged, fashioned, narrowed, or shaped wholly or in part by knitting machines or frames, or knit by hand, including such as are commercially known as seamless stockings, hose or half-hose, all of the above composed of cotton or other vegetable fiber, finished or unfinished, valued at—	
		Not more than 60 cents per dozen pairs	20 cents per dozen pairs plus 20 per cent.
		More than 60 cents and not more than $2 per dozen pairs	50 cents per dozen pairs plus 30 per cent.
		More than $2 and not more than $4 per dozen pairs	75 cents per dozen pairs plus 40 per cent.
		More than $4 per dozen pairs	$1 per dozen pairs plus 40 per cent.
1894	262	Stockings, hose and half-hose, selvedged, fashioned, narrowed, or shaped wholly or in part by knitting machines or frames, or knit by hand, including such as are commercially known as seamless or clocked stockings, hose, or half hose * * * all of the above composed of cotton or other vegetable fiber, finished or unfinished.	50 per centum ad valorem.
1897	318	Stockings, hose and half-hose, selvedged, fashioned, narrowed, or shaped wholly or in part by knitting machines or frames, or knit by hand, including such as are commercially known as seamless hose, and half-hose, and clocked stockings, hose or half-hose, all of the above composed of cotton or other vegetable fiber, finished or unfinished, valued at—	
		Not more than $1 per dozen pairs	50 cents per dozen pairs plus 15 per cent.
		More than $1 and not more than $1.50 per dozen pairs	60 cents per dozen pairs plus 15 per cent.
		More than $1.50 and not more than $2 per dozen pairs	70 cents per dozen pairs plus 15 per cent.
		More than $2 and not more than $3 per dozen pairs	$1.20 per dozen pairs plus 15 per cent.
		More than $3 and not more than $5 per dozen pairs	$2 per dozen pairs plus 15 per cent.
		More than $5 per dozen pairs	55 per centum ad valorem.

TABLE 14.—*Cotton hosiery, fashioned or seamless—Rates of duty*—Continued.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1909	328	Stockings, hose and half-hose, selvedged, fashioned, narrowed, or shaped wholly or in part by knitting machines or frames, or knit by hand, including such as are commercially known as seamless stockings, hose and half-hose, and clocked stockings, hose and half-hose all of the above composed of cotton or other vegetable fiber, finished or unfinished, valued at—	
		Not more than $1 per dozen pairs	70 cents per dozen pairs plus 15 per cent.
		More than $1 and not more than $1.50 per dozen pairs	85 cents per dozen pairs plus 15 per cent.
		More than $1.50 and not more than $2 per dozen pairs	90 cents per dozen pairs plus 15 per cent.
		More than $2 and not more than $3 per dozen pairs	$1.20 per dozen pairs plus 15 per cent.
		More than $3 and not more than $5 per dozen pairs	$2 per dozen pairs plus 15 per cent.
		More than $5 per dozen pairs	55 per centum ad valorem.
1913	260	Stockings, hose and half-hose, selvedged, fashioned, narrowed, or shaped wholly or in part by knitting machines or frames, or knit by hand, including such as are commercially known as seamless stockings, hose and half-hose, and clocked stockings, hose and half-hose, all of the above composed of cotton or other vegetable fiber, finished or unfinished; if valued at—	
		Not more than 70 cents per dozen pairs	30 per centum ad valorem.
		More than 70 cents, and not more than $1.20 per dozen pairs	40 per centum ad valorem.
		More than $1.20 per dozen pairs	50 per centum ad valorem.
1921	16	Cotton having a staple of one and three-eighths inches or more in length.	7 cents per pound.
	17	Manufactures of which cotton of the kind provided for in paragraph 16 is the component material of chief value.	7 cents per pound, in addition to the rates of duty imposed thereon by existing law.
1922	916	Hose and half-hose, selvedged, fashioned, seamless, or mock-seamed, finished or unfinished, composed of cotton or other vegetable fiber, made wholly or in part on knitting machines, or knit by hand.	50 per centum ad valorem.

COURT AND TREASURY DECISIONS.

Elastic stocking for varicose veins were declared not to be hosiery for tariff purposes under the act of 1890. They were classified as in chief value of silk or of cotton. (G. A. 666, T. D. 11383, of 1891.)

Men's cotton hose or half hose, made either with woven or knitted material, so fashioned by cutting and seam stitching as to resemble full-fashioned hose except the top portion, which is made of knit material joined together by a blind-seam stitch to the body of the hose, was held dutiable under paragraph 317 and not under paragraph 318 of the act of 1897. (G. A. 4657, T. D. 22007, of 1900.)

Cotton hosiery ornamented with clocking was held to be provided for as clocked stockings in paragraph 318 of the act of 1897 and not to be subject to the portion of the proviso in paragraph 339 for embroidered articles (G. A. 4715, T. D. 22268, of 1900; G. A. 6365, T. D. 27344, of 1906), but cotton hosiery embroidered with silk was held to come within the embroidery proviso in paragraph 339 of that act and subject to duty thereunder whenever such duty exceeded the compound rates imposed in paragraph 318. (Carter *v.* United States, 143 Fed., 256, of 1906; writ of certiorari denied, 202 U. S., 617, of 1906.)

The reenactment of the proviso to paragraph 339 of the act of 1897 in paragraph 349 of the act of 1909 with a limitation to articles or fabrics composed of flax or other vegetable fiber, while the old provision was not limited as to material, was construed not to warrant a different construction than that placed upon the proviso under the act of 1897 except in instances where the limitation as to material would apply. Cotton hosiery, embroidered, was held to come within paragraph 349 rather than within paragraph 328 of the act of 1909. (Abstract 29311, T. D. 32714, of 1912.)

The proviso was not reenacted in the act of 1913, but the phrase "by whatever name known" was inserted in the embroidery clause, and this was declared to withdraw from the other paragraphs of that act all embroidered articles just as surely as did the proviso in the acts of 1897 and 1909. (G. A. 7644, T. D. 34930, of 1914.)

Chain-stitched hosiery classified as embroidered wearing apparel under paragraph 339 of the act of 1897 was held dutiable as cotton hosiery under paragraph 318. (Abstract 22461, T. D. 30234, of 1909, following G. A. 4225, T. D. 19807, classifying cotton stockings, hose, or half hose, knitted in stripes of different colors running crosswise or transversely, subsequently chain-stitched longitudinally with single strands of silk or cotton thread on a sewing machine to come within paragraph 318 and not 339.)

The provisions in paragraphs 318 and 319 of the act of 1897 relating to stockings, hose, half hose, etc., were declared more specific than paragraph 347 for manufactures of ramie, vegetable fiber, etc., and held to include any hose of ramie. (G. A. 6304, T. D. 27177, of 1906.)

Infant's socks looped or knitted at the junction of the heel and sole were held dutiable under paragraph 328 of the act of 1909. (T. D. 31753, of 1911.) Under the act of 1909 in determining the component material of chief value in hosiery composed of silk and cotton the value of the cotton and silk in the gray condition just before the operation of making the article begins was taken. (Abstract 28633, T. D. 32560, of 1912.)

Children's cotton hose and half hose, made from fabrics knitted on two different types of machines and shaped by cutting and seam-stitching, were held to come within the provision "stockings, hose, and half hose, made on knitting machines or frames." (G. A. 7414, T. D. 33085, of 1913.)

COTTON GLOVES.

SUMMARY.

DESCRIPTION AND CLASSIFICATION.

Cotton gloves may be divided into four classes: (1) Canvas or flannel work gloves; (2) gloves made from tubular (circular) knit fabric; (3) lisle gloves; (4) suèded cotton gloves made of knit "Atlas cloth." The last class overshadows all the others in interest, so far as concerns its relation to the tariff. The manufacture of these

gloves is one of the industries that has grown up in this country as a result of the war, and the persons who are interested in it feel doubtful about their ability to compete with foreign manufacturers after normal trade conditions are restored. The tariff has never affected the manufacture of work gloves to any extent, and the other classes of gloves mentioned are produced and used in the United States in relatively unimportant quantities.

DOMESTIC PRODUCTION.

Quantity.—Several million dollars worth of work gloves are produced annually in this country, although the total output is difficult to estimate. These gloves are very often made of combinations of cloth and leather, the component material of chief value being as often leather as it is cloth. The value of the annual production of work gloves made entirely of cotton cloth may be conservatively estimated, however, at $3,000,000 to $4,000,000. The value of the annual output of gloves made of tubular knit fabric is about $400,000. The value of the output of lisle gloves is small, probably not reaching as large a total as the value of the gloves of tubular knit fabric. Probably about 1,300,000 dozen pairs of suèded cotton gloves, valued (price at factory) at $8,450,000, or $6.50 per dozen pairs, were manufactured in 1918.

Methods and processes.—The manner in which the Atlas cloth is made prevents it from raveling and makes it firm and strong. It will not stretch the longitudinal way of the weave after being shrunk, and this permits the production of a glove which will not stretch lengthwise, but will have elasticity across the palm so that it will shape itself to the hand and fit well. The Atlas process is often spoken of as a "weave," but the process is really knitting. The knit fabric, however, is such a close texture that it resembles a woven fabric.

Many technical difficulties have been encountered by the American manufacturers; in fact, they are just emerging from the experimental period. The suèding and the combining, or "duplexing," are both secret processes, and the method of each manufacturer differs slightly from the others. The suèding process has reached a more advanced state in this country than the duplexing. Very few duplex gloves were placed on the market by American manufacturers before the fall of 1918. The scarcity of gloves, and also of Atlas cloth made it more advantageous for the American manufacturers to make gloves of single thickness. There is, besides, a much larger market for the single-fold gloves, partly because of the difference in price and partly because they can be worn at all seasons.

In many respects the domestic product is just as good as the German—possibly better—but it seems difficult to duplicate the velvety finish of the imported gloves, which are an almost perfect imitation of chamois.

Materials and equipment.—Before the war the yarn used in making Atlas cloth came principally from Manchester, England. It was usually spun from Egyptian cotton. Stocks of yarn of this sort in this country were quickly reduced after the war began, and yarn of domestic make has been used with satisfactory results.

The warp knitting machines used to produce this glove fabric were made in Nottingham and Leicester, England, and in Chemnitz, Germany, before the war. Most of the machines used in this country have been imported; some of them were made by the Acme Pattern Co. of Buffalo, N. Y., and some of the manufacturers of the Atlas cloth have built machines for their own use.

Organization and capitalization.—Cotton gloves of all the varieties mentioned are made chiefly by small concerns. The average firm of glove makers works with a capital of about $50,000, although there are a few concerns with a capitalization of more than $500,000. The suèded cotton gloves are made in several instances by companies previously engaged in manufacturing leather gloves, silk gloves, veilings, or lingerie. Some of these concerns are larger than the typical glove manufacturing company, but most of them are small.

Localities of production.—Work gloves are made by many small companies scattered through the Middle West (chiefly in Ohio, Indiana, Illinois, and Wisconsin) and on the Pacific coast (principally in California). "Circular" cotton gloves have been made by a few small companies located in New York City and vicinity. Lisle gloves and suèded cotton gloves are made in New York City and vicinity and in Fulton County, N. Y., the great center of the leather-glove industry of this country.

Relation of domestic production to domestic consumption.—Practically all of the work gloves used in this country are made here. Prior to 1914, all of the suèded cotton gloves were imported, but for several years the German gloves could not be obtained and domestic manufacturers began to supply the market. The reentry of Germany in foreign trade has curtailed American production. Probably 75 per cent of the circular cotton gloves used here just before 1914 were made in this country, while now the domestic producers control the entire market. All of the lisle gloves were imported before the war. Domestic concerns began the manufacture of these also during the war, though probably about 50 per cent were supplied by Japan.

FOREIGN PRODUCTION.

Countries of largest production.—German manufacturers of cotton suèded gloves had practically a world monopoly prior to 1914. This industry was centered in and around Chemnitz, Saxony. Some gloves of this description were made in England, but very few compared with the number produced in Germany. Although the German factories continued to operate for some time after the war began, for a few years they were entirely shut off from other foreign markets. This was one of the first German industries to respond to post-war activities. Japan has made cotton gloves since 1914. The output of the Japanese factories has been chiefly lisle gloves. Some suèded gloves are made but the quality is altogether inferior to the German product.

IMPORTS.

Before the European war, 90 per cent of the cotton gloves imported into the United States came from Germany. Although German gloves were practically excluded for a few years they have

now regained their former position. Imports from Japan, which were comparatively large in 1919 and 1920, were insignificant in 1921 and the first quarter of 1922.

TARIFF HISTORY.

Under the tariff laws of 1894 and 1897 the import duty on cotton gloves was 35 per cent ad valorem. Cotton gloves were not specially enumerated under those acts but were included in "clothing, ready made, and articles of wearing apparel of every description. * * * composed of cotton or other vegetable fiber." From 1894 to 1897 the rate of duty on such articles was 40 per cent ad valorem.

In 1909 a clause was added to the hosiery paragraph (Schedule I, par. 328) providing for a duty of 50 cents per dozen pairs plus 40 per cent ad valorem on men's and boys' cotton gloves, knit or woven, valued at not more than $6 per dozen pairs, and 50 per cent ad valorem on men's and boys' cotton gloves valued at more than $6 per dozen pairs. All other cotton gloves remained dutiable, by the law of 1909, under the wearing-apparel paragraph at 50 per cent ad valorem.

In 1913 "gloves, by whatever process made, composed wholly or in chief value of cotton," were made dutiable at 35 per cent ad valorem (Schedule I, par. 260).

The emergency tariff act of May 27, 1921, levied a duty of 7 cents a pound on all articles made of cotton having a staple of 1⅛ inches or over. This affected most of the imports of cotton gloves.

The act of 1922, paragraph 915, divides cotton gloves into three classes: (1) Chamoisette gloves, made of warp-knit fabric, dutiable at specific rates, with a minimum of 40 per cent and a maximum of 75 per cent ad valorem; (2) other knit gloves, dutiable at 50 per cent ad valorem; and (3) gloves made of cotton cloth, dutiable at 25 per cent ad valorem.

GENERAL INFORMATION.

TARIFF ACT OF OCTOBER 3, 1913.

PAR. 260. * * * Gloves by whatever process made, composed wholly in or chief value of cotton, 35 per centum ad valorem.

DESCRIPTION.

Work gloves.—The United States is the only country in the world in which the manufacture of work gloves is of any importance. The gloves are made in more than a hundred styles and are used in a large number of industries—from candy making to shipbuilding. These gloves are very often made of canvas, with a palm reenforced by leather; sometimes, as in the case of gloves used for husking corn, they are reenforced with metal as well as with leather.

Gloves made of "circular" knit fabric. These gloves are so called because they are made of cloth manufactured on a machine similar to that on which knit underwear is made. The web comes from the machine in tubular form, and the product is cheap and of light weight. The gloves are cut from the piece and are sewed together as are leather gloves. They are not "knit goods" in the sense of

being turned out in final form by a special knitting machine. With the exception of work gloves, practically the only kind of cotton gloves made in this country before 1914 were the cheap cotton gloves of this circular knit fabric. These gloves are worn by policemen, soldiers, and sailors, and by lodges and fraternal orders on dress occasions and parades.

Lisle gloves.—This term is an inclusive one for gloves made of lisle (gassed) yarns, and it embraces many varieties of women's dress gloves. The gloves coming within this classification are made of various grades and qualities of knit cotton fabrics and are of much better quality than the gloves made of circular knit fabric. They differ from the suèded cotton gloves in the knitting and finish of the cloth. Before the day of suèded gloves they were in great demand for summer wear.

Suèded cotton gloves.—These gloves are commonly referred to as "Chamoisette" gloves, but the correct trade name is "suèded cotton" gloves. "Chamoisette" is used because the Julius Kayser & Co. advertised the suèded cotton glove, which they import from Germany under that name. Other companies apply different names to the same kind of glove. "Suedetex" is the name given by the Suedetex Glove Co.; "Fabrichant," by H. S. Hall & Co.; "Filosette," by Fownes Bros. & Co.; "Atlasette," "Suède finish," etc., are applied to the product by others. The gloves are washable, and are light and comfortable for summer wear. The duplex gloves, made of two thicknesses of the cloth, cemented together, are suitable for winter wear. The popularity of these gloves is increasing on account of their intrinsic merit, and because they are a good substitute for leather gloves, which have advanced greatly in price.

Gloves made of a single-fold material sometimes called "simplex" in contradistinction to the duplex gloves are in much greater demand than the latter because they can be worn at all seasons of the year and because they are much more reasonable in price. The popularity of these gloves is increasing on account of their intrinsic merit and because they are a good substitute for leather gloves which have become so expensive. The quality of the suèded glove is determined by the yarn used, the closeness of the knitting, and the finish. Some comparison as to quality can be obtained by examining the wrong side of a single-fold glove which will show minute horizontal ridges or rows of loops. Generally speaking, the greater the number of ridges to the inch the finer the quality.

RAW MATERIALS.

England is the principal producer of fine cotton yarns. As glove fabric requires yarn of comparatively high count, manufacturers both in Germany and America usually obtain Lancashire yarns. The German manufacturer is required to pay a duty on the yarn which he imports, but this is extremely small compared to the American duty on fine yarns. (See Cotton hosiery, page 22.) The yarns used are mainly 78/1 and 80/1 gray combed Egyptian. American yarns spun from long-staple uplands and Pima cotton have given satisfactory results.

PROCESSES OF MANUFACTURE.

Knitting machines of the Atlas type are used for making the fabric out of which the suèded cotton gloves are manufactured. These are warp knitting machines known as "flat" knitting machines, as distinguished from circular knitting machines on which circular fabric is made. The processes of knitting are entirely different and result in very dissimilar fabric. On a warp knitting machine hundreds of ends are supplied to the machine at one time from a series of bobbins or from a huge beam as are the warp ends in weaving. These threads are knitted simultaneously by an equal number of needles, a sidewise motion interlocking the loops horizontally. "Atlas cloth" is the trade name for the suèded cotton glove fabric; a special pattern wheel is used on the machine when this cloth is made.

The circular machine is a weft knitting machine utilizing only one or a few yarn ends which are knit horizontally into the fabric. The important advantages of the warp-end fabric are that it will not ravel as does Jersey cloth or as any fabric made on a circular knitting machine, and that it will not stretch the longitudinal way of the web after having been shrunk. It will stretch somewhat across the web. This enables manufacturers to produce a glove which does not stretch lengthwise, but which has elasticity across the palm so that it shapes itself to the hand and fits well. Warp knitting machines of this type, sometimes distinguished by the term "fast warp," were built in Chemnitz before the war and also in England at Nottingham and Leicester. The Acme Pattern Co., of Buffalo, N. Y., now builds them, and some of the makers of glove fabrics have built a few machines for their own use.

The next process after the fabric is knit is shrinking. The knit web is wet and stretched on frames in a very hot room until it is shrunk the required amount. The shrinkage varies considerably according to the yarn used, the closeness of the knitting, and the type of glove desired. The time consumed in this process is said to be anywhere from 3 to 30 days. Gloves are frequently designated as unshrunk, one-half shrunk, fully shrunk, or by intermediate terms. American manufacturers maintain that even the gloves known commercially as unshrunk probably have been subjected to the process as even the closest knitting will not produce a fabric sufficiently firm to give the desired suède effect.

After the fabric is shrunk it is ready for the suèding or napping. This has been one of the most difficult parts of the whole glove-making processes to master, the only other part which has given much trouble being the "combining" or duplexing—i. e., cementing two thicknesses of the fabric together—for use in the duplex gloves which are worn in the autumn and the winter. Suèding is a secret process, and each manufacturer has worked out a method of his own. Experimentation in this line cost the American manufacturers a considerable amount before the production of gloves had attained a commercial scale. The suèding machine consists of a series of rollers, covered with emery paper or sandpaper, over which the fabric passes. The wire rolls, which are used in raising the

nap on flannel, are too harsh for the Atlas cloth. Rolls covered with brushes or with cloth are used to give a smooth finish to the cloth. There are other operations which are not divulged by the possessors of the secret. In some factories cloth undergoes as many as 18 processes in being finished.

The process of cementing together two thicknesses of the knit fabric is called "duplexing." Manufacturers have had much difficulty in getting this properly done. Either the cement would show through the fabric after the gloves were washed, making black spots, or it would not be strong enough and the layers would separate. The preparation used could hardly be called cement, because when two layers of fabric are separated, after having been properly combined, there is found to be nothing between them, in the nature of a solid substance, such as would appear if ordinary glue or paste were used. Sometimes, when the work is not well done, the cement dries, the two thicknesses separate, and the dry particles of cement come out like grains of sand; this does not happen when the work has been properly done.

Only a small proportion of the knit fabric goes through the process of duplexing. More gloves are made of the single-thickness fabric than of the double thickness, and this was especially true of the situation during 1917, because it was hard to get enough fabric to satisfy all demands. The operations through which the knit fabric passes on its way to the finished glove are as follows:

(1) The fabric is knitted and cut into rectangular pieces of the right size for the gloves which are to be made; (2) the gloves are cut; (3) the size of the glove is stamped on the inside of the wrist; (4) the "points," or decorative lines, usually three in number, are sewed on the back of the glove; (5) the ends of silk thread are pulled through to the inside of the glove; (6) second silking (it is customary to do the silking in two operations, as it requires a combination of threads to make a point which looks well); (7) the remaining ends of silk threads are pulled through to the inside of the glove and all the ends are fastened by being tied; (8) thumb closing (that is, the top of the thumb is sewed up); thumb inserting (the thumb, which is cut separately from the rest of the glove, is inserted); (10) fourchette inserting (the fourchettes are the narrow strips which are sewed in making the sides of the fingers); (11) putting in the stays, which are small pieces of cloth designed to reinforce the glove at weak points; (12) closing (this process consists of sewing up the fingers); (13) hemming the edge of the wrist; (14) examining the glove for defects up to this point; (15) "laying off" (this consists in smoothing and pressing the glove on a heated brass form); (16) making buttonholes; (17) putting on buttons; (18) trimming loose ends of threads; (19) examining and repairing; (20) banding; (21) boxing; (22) shipping.

The fast-warp knitting machines are very large, the standard being about 180 inches wide. The mechanism is intricate and the operation heavy. Highly skilled labor is required for their manipulation. The operatives are always men, as is also the case in the other processes of making the fabric, such as the shrinking and dyeing. In the actual manufacture of the gloves, however, about 90 per cent of the workers are girls and women. The sanitary and other conditions prevailing in the knitting mills are about the same as conditions in the textile

industry in general. The glove-making business seems to be clean and healthful.

The workers are paid by the piece, almost invariably. The trend of wages in the suèded cotton-glove industry, which did not exist prior to the war, is similar to that of the entire knit-goods industry in New York State as given on page 21, because practically all of the glove-making concerns are located in that State. It so happens that a large part of the industry is in localities where there is great competition for similar labor in periods of prosperity. Hence the average wage in this industry is probably somewhat above the average wage in the knit-goods industry.

Most of the work of manufacturing suèded cotton gloves is done in factories. The only place where there is any considerable amount of putting out work is Gloversville, N. Y. In that city a large number of women take work to do in the home. Many of them have motors installed in the homes, and the sewing is done on power-driven sewing machines. Women who do this work are often former employees of the glove factories.

HISTORY OF THE INDUSTRY.

Prior to the European war the suèded cotton glove was made almost exclusively by manufacturers in Chemnitz and surrounding villages of Saxony. The industry originated in England, but became established in Chemnitz about 1906, and subsequently was entirely discontinued in England.

In 1913 England received over 2,500,000 dozen and the United States over 1,500,000 dozen pairs of cotton gloves of German manufacture.

The German product had reached a very high degree of perfection. The gloves were an excellent imitation of chamois or undressed kid, and were made in all the familiar glove shades—mocha, yellow or cream, brown, and black, as well as white. There was some criticism, however, of the style and fit of the German gloves.

Soon after the European war began, certain American manufacturers undertook the business of making suèded cotton gloves in anticipation of the cessation of imports from Germany. The firms which interested themselves in this business had been manufacturing leather or silk gloves before the war, or, in a few cases, were concerns which had been making veilings, lingerie, and women's apparel of other kinds.

The business of manufacturing the suèded cotton glove grew very slowly at first on account of the technical difficulties involved. A great deal of experimentation was necessary before the American manufacturers could weave and finish as good an Atlas cloth as that which had been used by the German manufacturers. The importations of German gloves continued for some time after the war began, but in 1916 there was a marked diminution in the imports, and the domestic manufacture was correspondingly stimulated. Another fact which operated to encourage the manufacture of these gloves was the great increase in the price of leather gloves. This subject is discussed under the heading "Rival commodities, page 43."

made glove. The retailers were willing to push the sales of the poorer gloves because of the slight advantage in price which they obtained. Both German and American gloves sold, however, for the same retail price—10 cents a pair.

Notwithstanding the fact that the American manufacturers were able to continue in the cotton-glove business after 1913, they assert that the margin of profit was very small and that they intended, if the war had not intervened, to invest their capital in some other more productive line. One manufacturer stated that he could have made $50 a week if he had not been obliged to pay a factory superintendent. It appears that the business was just paying costs, including the wages of superintendence.

RIVAL COMMODITIES.

The increasing price of leather gloves after the outbreak of the war had the effect of causing women to turn to the suèded cotton gloves as a substitute for the leather gloves. The percentage of increase in price of the suèded cotton gloves was as great as the percentage of the increase in the price of leather gloves. The price of the suèded cotton gloves to the importers ranged, before the war, from $2.50 to $5 per dozen pairs, and the gloves sold for 50 cents to $1 per pair at retail. In 1918, the price for the domestic product ranged from $1 to $2 per pair at retail. Leather gloves, on the other hand, increased from their former price of $1 to $2 a pair to an average of $2 to $4 a pair retail. It is evident that an increase in the price of an article from $2 to $4 means that there will be substituted for such an article some product which has increased from a former average of 50 cents to an average of $1. This was the situation in regard to the leather gloves and the suèded cotton gloves, and this fact greatly stimulated the domestic manufacture of the suèded cotton gloves.

The various branches of the glove business are all closely related and the growth of a new industry, such as the making of suèded cotton gloves, naturally affects the makers of silk and leather gloves. Many manufacturers who formerly devoted all their attention to making leather gloves bought the suèded cotton cloth from which to make gloves.

METHODS OF MARKETING.

Some of the leading manufacturers of the suèded cotton gloves sell through jobbers, but the majority of them have a copyrighted name or trade-mark for their product and sell direct to the retailers. Those who are engaged in marketing the gloves are, for the most part, manufacturers of and dealers in women's wear of various kinds. A number of them also have been interested for some time in the leather-glove or silk-glove business. Few companies have been organized expressly for the purpose of placing these gloves on the market. They were taken up as a promising side line by those already engaged in a similar line of business but have become in some instances of more importance than any other class of goods sold by the firms handling them.

PRODUCTION IN THE UNITED STATES.

The following is an estimate, based upon statements of the manufacturers, of the value of the domestic production of men's and boys' cotton gloves, of the kind commonly worn by policemen, manufactured after the passage of the act of 1909, which levied a duty of 50 cents per dozen pairs and 40 per cent ad valorem on this class of gloves. For purposes of comparison the imports of these gloves are also given.

TABLE 1.—*Men's and boys' cotton gloves.*

Year.	Domestic production (estimated).		Imports for consumption,[1] value.
	Quantity.	Value.	
	Dozen pairs.		
1910		$250,000	$122,760.00
1911		250,000	165,840.00
1912		300,000	88,362.78
1913		300,000	88,699.00
1914		150,000	22,961.72
1915		75,000	[2]
1916		150,000	[2]
1917		300,000	[2]
1918		400,000	[2]
1919 [3]	133,968	494,000	[2]

[1] Imported as "men's and boys' cotton gloves, valued at less than $6 per dozen pairs."
[2] After the act of 1913 was passed all imports of cotton gloves were classified together in the Commerce and Navigation Reports. It is therefore impossible to tell the extent of imports of the cheap gloves after this date, but it is known that they declined after the European war began.
[3] From Federal Census; includes lisle gloves.

The output of work gloves is very difficult to estimate. These gloves are made of various combinations of cloth and leather. The total annual production must be worth several million dollars, as there are some large firms engaged in the business, but only a small proportion of this amount is represented by gloves made wholly of cotton.

The manufacture of suèded cotton gloves is an entirely new industry in this country. The following estimate of the quantity and value of the domestic production is based upon the statements of manufacturers:

TABLE 2.—*Domestic production of suèded cotton gloves.*

Year.	Number of dozen pairs.	Value.	Price at the factory, per dozen pairs.
1914	50,000	$200,000	$4.00
1915	200,000	1,000,000	5.00
1916	500,000	2,750,000	5.50
1917	1,000,000	6,000,000	6.00
1918	1,300,000	8,450,000	6.50
1919 [1]	289,179	.....	.....
1920	287,339	.....	.....

[1] Census figures give 163,086 dozen pairs, valued at $1,061,856.

The census figures for the production of suèded gloves are smaller than those of the Tariff Commission for the same year (1919), because census returns consider only the primary product of an industry

under a given classification. A large proportion of the cotton suèded gloves are made by manufacturers of leather gloves, and therefore would not be returned to the Census Bureau as products of the knit-goods industry. The Tariff Commission figures are in all probability too low, as they represent (1919 and 1920) the product of only the four concerns that answered the commission's inquiry.

FOREIGN PRODUCTION.

Germany.—Before the World War German manufacturers had obtained such perfection in the manufacture of suèded gloves that they practically shut out all other competition in the markets of the world. German export statistics are given by weight, and it is estimated from these weights and from imports into other countries that their foreign trade averaged between 7,000,000 and 8,000,000 dozen pairs annually. Great Britain was a market for over 2,500,000 and the United States for over 1,500,000. A representative of the manufacturers in Germany estimates that there are from 200 to 400 factories in Chemnitz and near-by villages. Most of these are comparatively small and have the dyeing and finishing of the cloth done outside.[1]

England.—Although England was originally the home of fabric glove manufacture, this trade was ruined by the success of German chemists and machine builders who were the first to impart to the suèded fabric a permanent black dye and a soft, skinlike appearance. The imports from Germany into England in 1913 amounted to 2,511,009 dozen pairs, valued at $3,523,000. This was a market worth striving for, and with the elimination of German competition English manufacturers, encountering much the same technical difficulties met by Americans, revived the cotton-glove industry. Glove fabric is made from fine yarn, the best of which is spun in England—even the Germans had imported theirs—so in one respect the English manufacturers had an advantage. Nottingham became the center of this trade and in 1918 produced four times the quantity of glove fabric that was produced in 1913. In 1920 it was said that the industry, still in its infancy, employed about 6,000 workers, but fear was expressed that its success would again be menaced by German competition.[2]

Although German trade in cotton gloves has shown renewed activity in the British market, imports have not reached the pre-war level as in the United States. However, British glove manufacturers, alarmed at the increase, have invoked the "safeguarding of industries act," which provides an import duty of 33⅓ per cent. This duty was imposed by a board of trade order on fabric gloves and glove fabric, if manufactured in Germany, to be effective from October 9, 1922, until August 19, 1924. There was vigorous opposition from the Lancashire spinners who supplied yarn to the German glove manufacturers and who fear that the Germans may retaliate by refusing to buy English yarn.

[1] In the files of the Tariff Commission there are several communications from representatives of associations of the German cotton-glove industry. These deal with the general conditions in the industry at the particular time when they were written, and as these conditions have changed rapidly they have not been quoted at length in this report.

[2] Dry Goods Economist, Oct. 23, 1920.

Imports into England from Japan by 1918 supplied about 50 per cent of the quantity which was formerly received from Germany, but so large a proportion of the home demand remained to be satisfied that English manufactuers did not build up a very extensive export trade.

Japan.—The cotton-glove industry of Japan probably shows a more marked expansion in quantity of output than that of any other country. Production amounted to 551,000 dozen pairs in 1913 and to 3,762,000 dozen pairs in 1918.[3]

The Japanese trade was transitory, for although they turned out enormous quantities at an exceedingly low cost, the quality was, for the most part, so inferior that other goods even at higher prices would be accepted. The following figures show the decline of Japanese export trade since the peak of 1918: 2,459,000 dozen pairs in 1918; 1,216,000 dozen pairs in 1919; and 403,000 dozen pairs in 1920.

France.—There were several manufacturers of fabric gloves in France prior to 1914, but as they bought their fabric in Germany they represented only the cutting-up end of the industry. When imports from that country were cut off the French began to build the fast-warp knitting machines and to make the required fabric.

The industry is still specialized to a great extent, and all the glove factories do not produce the knit fabric which they use. Paris, Lyon, and Grenoble are the principal centers; there are isolated factories in other parts of the country. The industry grew so rapidly with the removal of German competition that exports of cotton gloves from France increased from a value of a little more than $3,000 in 1913 to over $1,500,000 in 1917.

The quantity exported expressed in weight has been as follows:

Exports of cotton gloves from France.

Year.	Pounds.
1913	1,102
1917	248,238
1918	126,323
1919	174,163
1920	216,712
1921	82,673

Twelve pairs of gloves weigh from one-half pound to 2 pounds; about three-fourths pound per dozen pairs may be taken as an average.

Switzerland.—Much attention has been given to the various branches of the knit-goods industry in Switzerland in the last few years and that country is gradually gaining a place in the manufacture of fabric gloves. German machines, built at Limbach, were imported and by 1918 about 200,000 dozen pairs of gloves were being produced annually. The value of Swiss exports of cotton gloves amounted to about $600 in 1913, and to about $425,000 in 1919.[4]

IMPORTS.

Figures of domestic production may be compared with the imports of cotton gloves of all kinds. These imports were chiefly of suèded cotton gloves up to 1917; during 1917 and 1918 they were chiefly lisle gloves.

[3] Official Japanese statistics.

[4] L'Exportateur Suisse (periodical), March, 1920.

Prior to 1914 statistics of the Department of Commerce represented only men's and boys' cotton gloves, specially mentioned in the act of 1909. Comparing official import figures for these years with the estimated production of men's and boys' gloves (Table 1, p. 44) it will be seen that imports were 49 per cent of the domestic production in 1910 and about 28 per cent in 1913.

The imports of women's and children's cotton gloves, of which there was practically no corresponding domestic production, were included in "Cotton wearing apparel" (in the United States Commerce and Navigation Reports) prior to 1914, but their approximate amount may be determined from the following figures, from the Daily Trade and Consular Reports. These imports from Chemnitz represent about 90 per cent of the total imports of cotton gloves into the United States in the years mentioned.

The value of cotton gloves imported from Chemnitz, Saxony, to the United States in 1911 amounted to $1,211,000; in 1912, $1,741,000; and in 1913, $2,396,408.

The total imports of cotton gloves for each year, 1911–1913, would therefore about equal the sum of these figures and imports for consumption during corresponding years. Imports for 1913 were first in value; for 1915, second. From 1917 to 1920 imports were much smaller, the largest amounting to $590,684 in 1918.

Imports of cotton gloves were not given by countries until 1919. Japan supplied 97.8 per cent of the total during the year 1919, and 77.8 per cent in 1920. German gloves began to arrive again in 1919 and amounted, in 1920, to 16 per cent of the total from all countries.

Imports from Germany have practically reached the pre-war level. The total general imports of cotton gloves for the 12 months ended June, 1922, amounted to 1,595,125 dozen pairs, valued at $3,916,972. The imports for the first six months of 1922 were as follows:

TABLE 3.—*General imports of cotton gloves, six months, 1922.*

Month.	Dozen pairs.	Value.	Unit value.
January	104,304	$188,488	$1.81
February	110,631	236,777	2.14
March	173,462	434,729	2.51
April	144,473	369,651	2.56
May	147,040	366,910	2.49
June	165,122	484,009	2.93
Total	845,032	2,080,564	2.46

The monthly statistics of the Department of Commerce do not give the country of origin, but it is evident that practically all of these gloves come from Germany.

Imports of cotton gloves were not given by countries until the last half of 1918 (Table 7, p. 53). Japan supplied 90 per cent of the total quantity during the year 1919 and 41 per cent in 1920. German gloves began to arrive again in 1919, and in 1920 amounted to 57 per cent of the total from all countries; in 1921 to 97 per cent and the first quarter of 1922 to 98 per cent.

The gloves imported are said to be largely of the "unshrunk" variety, which could be bought in Germany for about $2.85 per dozen pairs in July, 1922. They represent some of the cheaper types made up without extra finishings in points and clasps, but are of an extremely good grade of suèded fabric.

PRICES.

Two pairs of suèded cotton gloves were submitted to the commission as samples. One pair, made in Chemnitz, Germany, bore the name of Alban Aurich. These gloves cost 7½ marks or $1.785 (less 5 per cent) per dozen pairs in Germany, in 1913. The landed cost in this country, after deducting the discount and paying the 35 per cent duty and 10 cents a dozen for expenses, was $2.40. Better grades of the suèded gloves were imported for $3.75 to $4.25 per dozen pairs, landed cost. The average price of the gloves to the retailer was about $4.50 per dozen pairs, and the usual price to the consumer was 50 cents a pair. The other sample pair submitted was an American product. Both cloth and gloves were made in this country. The particular yarn used in these gloves may not have been made from domestic cotton, but many of the gloves now being made in this country are made from American-grown cotton. Gloves similar to these were being sold in 1918 to jobbers for $6 to $7 per dozen pairs; to the retailers for $7 to $9 per dozen pairs, and to the consumer for $1 a pair, usually, although the cheaper grades were sometimes sold as low as 75 cents. The duplex gloves sold for $1.50 to $2 per pair.

A lisle glove was formerly sold for 35 cents at retail, but of late there has been nothing to take its place, except some cotton gloves of rather poor quality imported from Japan. Some of these cost as low as $2.35 per dozen pairs in Japan, and were sold for about 50 cents a pair at retail. There is a dearth of low-priced cotton gloves, as American manufacturers are devoting their attention to the better grades.

Gloves made of circular cotton fabric, made on a knitting machine similar to a stocking machine, have been sold for 10, 15, and 25 cents a pair at retail in the past. Gloves, like the sample submitted, sold for 10 cents a pair before 1909, and for 15 to 25 cents a pair from 1909 to 1913. After the rate of duty was reduced to 35 per cent, in 1913, the price fell to 10 cents a pair. Few American manufacturers are producing this kind of gloves, and most of those made are bought for the various branches of the service by the United States Government.

The imported suèded glove referred to as bought in Germany for $2.85 is sold to the retailer for about $4 and is retailed by him at about 50 cents a pair. An American glove, closely approaching this in style and quality, was sold at the mill in July, 1922, for about $4.85. A similar glove had been selling in the summer of 1921 for $6.50.

COMPETITIVE CONDITIONS.

Domestic competition.—Competition among the domestic producers never became very severe, because the demand was greater than their possible output up to the time the German gloves reentered

the market. Production in this country, however, was steadily increasing, and the time was not far distant when jobbers and retailers would have become more critical of the goods offered them. The increasing competition, which naturally would have followed the continuous expansion of the industry, would probably have tended to retard undue price advances. American manufacturers had arrived at a stage where they had overcome the initial disadvantages of experimentation and could devote their efforts largely to improving the quality of the gloves produced. The renewed activity of the German industry eliminated the incentive which they had for investing further capital, and in 1922 few American manufacturers were operating their plants.

Comparative costs of production.—Figures in regard to the comparative costs of production in the different countries are not of very great worth, particularly in a period of fluctuating wage levels. However, some figures were supplied the Tariff Commission by representatives of German manufacturers, and the commission procured from American manufacturers statements in detail as to their cost of production of similar articles. The results are given below, but owing to the conditions prevailing and to the lack of verification by official accountants, these are to be regarded as approximate rather than as precise comparisons.

TABLE 4.—*Comparison of estimated manufacturing costs of cotton suède-finished gloves, United States and Germany, 1921.*

	Cost per dozen pairs.		Per cent of total cost.	
	American.[1]	German.	American.[1]	German.
Unshrunk, 2-clasp:				
Yarn (80/1)	$0.91	$0.72	.....	.....
Other cloth expense (knitting, dyeing, finishing)	.73	.43	.....	.....
Total cloth	1.64	1.15	33.47	48.94
Other material (clasps, etc.)	.57	.58	11.63	24.68
Total material	2.21	1.73	45.10	73.62
Overhead	.93	.21	18.98	8.94
Labor in making glove	1.76	.41	35.92	17.44
Total	4.90	2.35	100.00	100.00
Landing costs	.....	.10	.....	.....
Total	4.90	2.45	.....	.....
Shrunk, 2-clasp:				
Yarn (80/1)	1.16	1.05	.....	.....
Other cloth expense (knitting, dyeing, finishing)	1.02	.69	.....	.....
Total cloth	2.18	1.74	38.58	54.89
Other material (clasps, etc.)	.64	.61	11.33	19.24
Total material	2.82	2.35	49.91	74.13
Overhead	1.00	.29	17.70	9.15
Labor in making and packing glove	1.83	.53	32.39	16.72
Total	5.65	3.17	100.00	100.00
Landing costs	.....	.10	.....	.....
Total	5.65	3.27	.....	.....

[1] Average of 3 companies for the unshrunk, 2-clasp; average of 4 companies for the shrunk, 2-clasp.

The following is a comparison of estimated German costs in 1914-1921 and January, 1922:

TABLE 5.—*Estimated manufacturing costs of cotton suède-finished gloves, Germany.*[1]

[Data supplied by representative of German manufacturers.]

	1914		1921 (April).		1922 (January).	
	Cost per dozen pairs.	Per cent of total cost.	Cost per dozen pairs.	Per cent of total cost.	Cost per dozen pairs.	Per cent of total cost.
Unshrunk, 2-clasp:						
Yarn (80/1)	$0.35		$0.72		$0.86	
Other cloth expense (knitting, dyeing, finishing)	.19		.43		.26	
Total cloth	.54	46.96	1.15	48.94	1.12	57.44
Other material (clasps, etc.)	.25	21.74	.58	24.68	.36	18.46
Total material	.79	68.70	1.73	73.62	1.48	75.90
Overhead	.06	5.21	.21	8.94	.18	9.23
Labor in making and packing gloves	.30	26.09	.41	17.44	.29	14.87
Total	1.15	100.00	2.35	100.00	1.95	100.00
Turnover and export taxes					.18	9.28
Shrunk, 2-clasp:						
Yarn (80/1)	.50		1.05		1.25	
Other cloth expense (knitting, dyeing, finishing)	.29		.69		.39	
Total cloth	.79	48.76	1.74	54.29	1.64	60.52
Other material (clasps, etc.)	.31	19.14	.61	19.24	.44	16.24
Total material	1.10	67.90	2.35	74.13	2.08	76.76
Overhead	.09	5.56	.29	9.15	.26	9.59
Labor in making and packing gloves	.43	26.54	.53	16.72	.37	13.65
Total	1.62	100.00	3.17	100.00	2.71	100.00
Turnover and export taxes					.23	8.49

[1] Conversions made at the following rates: 1914, 1 mark=$0.2382; April, 1921, 1 mark=$0.046; January, 1922, 1 mark=$0.005204.

As production at the present time in the United States is not normal, costs have not been obtained to compare with the latest German costs supplied. From 2 to 2¼ square yards of fabric are required for one dozen pairs of short gloves. Estimated on the above costs of material and labor, the following comparison of American and German fabric costs has been calculated on a basis of 2 square yards to a dozen pairs of gloves, and secondly on a basis of 2¼ square yards to a dozen pairs:

TABLE 6.—*Comparison of American and German estimated costs of cotton suède-finished glove-fabric per square yard, 1921.*

	American.	German.	Difference.
Unshrunk cloth:			
At 2 square yards per dozen pairs	$0.82	$0.576	$0.244
At 2¼ square yards per dozen pairs	.73	.512	.218
Shrunk cloth:			
At 2 square yards per dozen pairs	1.09	.872	.218
At 2¼ square yards per dozen pairs	.97	.775	.195
Duplex cloth:			
At 2 square yards per dozen pairs	2.10	1.395	.705
At 2¼ square yards per dozen pairs	1.87	1.240	.630

Competition with Germany.—The respective merits of the German-made and American-made Atlas cloth and suèded cotton gloves are often discussed, but involve different standards. Large retailers in the country disagree radically. Some of them say that the American product has attained an excellence unsurpassed by any gloves which the Germans ever sent over. Others maintain that the American-made gloves are markedly inferior to the imported. There is substantial agreement, however, that American manufacturers are steadily improving the quality of their output, and very few persons deny that the domestic product is now at least almost as good as the Chemnitz gloves.

Some of the American manufacturers assert that there has always been criticism of the style and fit of the German gloves. They become "baggy" after a little wear, and furthermore the clasps and other small details of finish are not so good as those of the domestic product. In regard to the tendency of the German-made gloves to become baggy, the reason does not lie in the way the cloth is woven but in the manner in which it is shrunk, or perhaps better, the degree to which it shrunk. The more it is shrunk the less is its elasticity, and the German cloth is shrunk about to the maximum. The American-made gloves therefore seem to have much more elasticity. The principal point in which American gloves are inferior is the finish, or suèding. American manufacturers have not yet learned the secret of the beautiful velvety finish which makes the best German gloves almost a perfect imitation of chamois or mocha skin.

The German suèded cotton-glove industry seems to have recovered its normal productivity more rapidly even than other German textile industries, if we are to judge by exports. This is probably because the German suèded cotton glove was about the only one known in foreign markets prior to the war, and its present popularity is no doubt in large measure due to its former reputation. German gloves were always considered the standard of excellence, and when they could be obtained again at attractively low prices there was a rush of buyers to the glove-making district. This occasioned a tremendous boom, which does not necessarily signify that the industry will continue on any such scale of prosperity. The conditions that make the continued success of other industries in Germany a probability would also affect the glove industry. (See Hosiery, p. 15.) The good name of the German cotton suèded glove, combined with facilities of manufacture and secret processes in finishing, would give a German glove manufacturer some advantages not enjoyed by German industries in general.

Competition with Japan.—It has been difficult to obtain reliable figures as to the cost of production in Japan, especially labor cost. The fact that costs vary greatly within the country, explains some of the discrepancies in figures. It is stated, on good authority, that some of the work on gloves is done in "bush shacks," and that what costs one manufacturer 13 yen, costs another but 3 yen. It may safely be assumed that the actual labor cost of cotton gloves in Japan is low, because most of the work is done by women and girls. The Japanese are exceptionally quick to learn operations of that sort. Some of the American manufacturers, who have had Japanese operatives, report them to be as good as any workers ever employed in the industry.

Some of the importations from Japan in the spring of 1918 were brought in at $2.35 per dozen pairs (cost in Japan). The cheapest gloves imported from Germany before the war, with the exception of the gloves made from circular knit fabric, were valued at $2.25 per dozen pairs (landed cost); the Japanese have therefore been selling the gloves nearly as cheaply as the Germans did, although the quality of the goods was much below the German standard. Not many of the cheaper gloves have been made in the United States since 1914, and the dealers have had practically nothing to take the place of the lisle gloves that used to retail at 35 cents a pair until the gloves from Japan were brought in. The supply of cotton gloves of all kinds has been so small that it has been better for the domestic manufacturers to devote their whole attention to making the gloves of the better grade; consequently they have concentrated on the suèded gloves.

Status of the domestic manufacture.—The manufacture of suèded cotton gloves in this country is, in a sense, an "infant industry." Viewed from another angle, it is merely a new subsidiary or side line to an old industry, or rather several old industries, viz, the manufacture of silk gloves, of leather gloves, and of cotton cloth. Most of the machines for making the Atlas cloth and for sewing the gloves have been adapted to this new line of work from former utilization for the branches of manufacture mentioned. A special pattern wheel is put on a "tricot" knitting machine when it is used for making the Atlas cloth. The suèding process, however, requires the use of a highly specialized new machine. Ordinary napping machines, used in making cotton flannel, etc., will not do at all for the chamoisette. The wire rolls are too harsh, and a much finer roughing process must be employed. The duplexing process for cementing layers of the fabric together, which is done under hydraulic pressure, is another specialized operation. In glove making the same sewing machines will do for many kinds of fabric. Cotton gloves can be sewed on the machines on which light leather gloves are made or on those on which silk gloves are made.

It is an open question whether the American manufacturers can continue to make cotton gloves in competition with Germany after normal conditions are restored. American manufacturers are striving to secure high quality, excellent style, and good pattern in their gloves, and if they attain these desired ends they will be able to hold their own in the future, even against a lower priced imported glove. This is not their view of the situation, however; most of them have expressed the opinion that the present rate of duty is too low to enable them to meet foreign competition successfully.

The American industry in the summer of 1922 was practically at a standstill. It was more profitable to import than to manufacture suèded cotton gloves, and very few firms were making up any gloves in the face of the competition from the low-priced German goods. The stabilization of the German currency would remove much of the speculative element involved in buying in Germany and probably in general would tend to raise prices in that country. It can be seen from the monthly import statistics (p. 47) that the price of imported gloves, which were almost entirely German-made, gradually increased after the beginning of 1922.

STATISTICAL TABLES.

TABLE 7.—*Cotton gloves—Imports by countries, calendar years 1918–1922.*

[Calendar year.]

Imported from—	July to December, 1918.		1919		1920	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Dozen pairs.		*Dozen pairs.*		*Dozen pairs.*	
Austria					365	$2,921
Belgium					1,105	3,698
Czechoslovakia					115	1,757
Denmark			3	$6	202	1,450
France	1,562	$1,157	307	2,459	59	332
Germany			3,960	6,689	220,211	1,034,566
Netherlands					1,231	4,587
Switzerland					274	2,036
United Kingdom	198	820	717	1,799	4,528	18,536
Canada	79	198	12,695	22,174		
Japan	46,845	75,225	163,557	272,727	157,661	271,986
All other countries					663	3,768
Total	48,684	77,400	181,239	305,854	386,414	1,345,637

Imported from—	1921		Jan. 1 to Sept. 21, 1922.	
	Quantity.	Value.	Quantity.	Value.
	Dozen pairs.		*Dozen pairs.*	
Austria			1	$4
Czechoslovakia	580	$1,175	4,356	17,274
France	3,670	13,898	10,113	53,963
Germany	1,083,081	3,190,237	1,307,267	3,546,026
Netherlands	271	856	955	3,402
Switzerland	20,168	52,968	749	2,210
United Kingdom	361	1,875	621	1,067
Canada	1,799	4,581	4	8
Japan	3,976	4,602	3,723	5,236
All other countries	174	1,108	15	289
Total	1,114,080	3,271,300	1,327,804	3,629,479

TABLE 8.—*Cotton gloves—Total* [1]*—Imports for consumption—Revenue.*

Year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Dozen.				*Per cent.*
Fiscal year:						
1910	Various (see following table).	176,253	$312,947	$218,683	$1.78	69.87
1911	do	153,436	167,495	143,792	1.09	85.85
1912	do	86,886	88,362	78,788	1.02	89.17
1913	do	79,626	88,699	75,292	1.11	84.89
1914	do	11,996	22,961	15,182	1.91	66.12
1914	35 per cent [2]	1,511,732	2,161,077	756,377	1.43	35.00
1915	do	1,513,338	2,386,781	835,373	1.58	35.00
1916	do	664,471	1,147,790	401,726	1.73	35.00
1917	do	112,027	208,565	72,997	1.86	35.00
1918	do	420,667	590,684	206,739	1.40	35.00
1919	do	149,333	245,089	85,731	1.64	35.00
1920	do	203,370	372,866	30,503	1.83	35.00
Calendar year:						
1920	do	304,015	1,078,081	377,328	3.54	35.00
1921	do	414,410	1,543,239	540,134	3.72	35.00
1921 [3]	35 per cent plus 7 cents per pound.	749,614	1,907,903	708,714	2.54	37.15
1922 (Jan. 1 to Sept. 21).	35 per cent	93,129	210,073	73,526	2.25	35.00
1922 (Jan. 1 to Sept. 21).	35 per cent plus 7 cents per pound.	[4] 1,258,673	3,462,522	1,284,117	2.75	37.09

[1] Not separately stated prior to 1910.
[2] Only one classification under the act of 1913, all cotton gloves, by whatever process made. The inclusion of women's gloves, formerly imported as cotton wearing apparel, accounts for the apparent increase.
[3] Under emergency tariff act of May 27, 1921. Quantity equivalent to 584,965 pounds.
[4] Equivalent to 1,031,925 pounds.

TABLE 9.—*Cotton gloves* [1]*—Men's and boys', knitted or woven—Imports for consumption—Revenue.*

VALUED AT NOT MORE THAN $6 PER DOZEN PAIRS.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Dozen pairs.				*Per cent.*
1910 [2]	50 cents per dozen pairs, plus 40 per cent.	148,977	$122,765	$123,592	$0.824	100.67
					.417	128.00
1911	do	153,258	165,840	142,965	1.08	86.21
1912	do	86,886	88,362	78,788	1.02	89.17
1913	do	79,626	88,699	75,292	1.11	84.89
1914	do	11,996	22,961	15,182	1.91	66.12

VALUED AT MORE THAN $6 PER DOZEN PAIRS.

1910 [2]	50 per cent	27,276	$190,182	$95,091	$6.97	50.00
1911	do	178	1,655	827	9.30	50.00

[1] Not separately stated prior to 1910. [2] From Aug. 5, 1909, to June 30, 1910.

TABLE 10.—*Rates of duty.*

Act of—	Par.	Tariff classification or description.	Rate of duty.
1883	324	* * * all manufactures of cotton, not specially enumerated or provided for in this act * * *.	35 per centum ad valorem.
1890	349	* * * articles of wearing apparel of every description, * * * composed of cotton * * * or of which cotton * * * is the component material of chief value, * * *.	50 per centum ad valorem * * *.
1894	258	* * * articles of wearing apparel of every description, * * * composed of cotton * * * or of which cotton * * * is the component material of chief value, * * *.	40 per centum ad valorem.
1897	314	* * * articles of wearing apparel of every description, * * * composed of cotton * * * or of which cotton * * * is the component material of chief value, * * *.	50 per centum ad valorem * * *.
1909	328	* * * Men's and boys' cotton gloves, knitted or woven:	
		Valued at not more than $6 per dozen pairs	50 cents per dozen pairs and 40 per cent ad valorem.
		Valued at more than $6 per dozen pairs	50 per cent ad valorem.
1913	256	* * * articles of wearing apparel of every description, composed of cotton * * * and india rubber * * *.	30 per cent ad valorem.
	260	* * * Gloves by whatever process made, composed wholly or in chief value of cotton.	35 per cent ad valorem.
	358	* * * wearing apparel * * * embroidered in any manner by hand or machinery, whether with a plain or fancy initial, monogram, or otherwise, * * *.	60 per cent ad valorem.
1921	16	Cotton having a staple of 1⅛ inches or more in length	7 cents per pound.
	17	Manufactures of which cotton of the kind provided for in paragraph 16 is the component material of chief value.	7 cents per pound, in addition to the rates of duty imposed thereon by existing law.
1922	914	Knit fabric, in the piece, composed wholly or in chief value of cotton or other vegetable fiber:	
		Made on a warp-knitting machine	55 per centum ad valorem.
		Made on other than a warp-knitting machine	35 per centum ad valorem.
		Gloves, composed wholly or in chief value of cotton or other vegetable fiber:	
	915	Made of fabric knit on a warp-knitting machine—	
		If single fold of such fabric—	
		When unshrunk and not suèded, and having less than 40 rows of loops, per inch in width on the face of the glove.	50 per centum ad valorem.
		When shrunk or suèded or having 40 or more rows of loops per inch in width on the face of the glove, and not over 11 inches in length.	$2.50 per dozen pairs.
		And for each additional inch in excess of 11 inches	10 cents per dozen pairs.
		If of two or more folds of fabric, any fold of which is made on a warp-knitting machine, and not over 11 inches in length.	$3 per dozen pairs.
		For each additional inch in excess of 11 inches	10 cents per dozen pairs.
		But in no case shall any of the foregoing duties be less than 40 nor more than 75 per centum ad valorem.	
		Made of fabric knit on other than a warp-knitting machine	50 per centum ad valorem.
		Made of woven fabric	25 per centum ad valorem.

COURT AND TREASURY DECISIONS.

In 1883 cotton gloves were omitted from the provision for goods made on frames. They were held to be dutiable either under that provision or as manufactures of cotton, which carried the same rate of duty. (T. D. 6248.)

But cotton gloves lined with wool, the wool constituting a substantial feature but not in chief value, were held dutiable under that act as wearing apparel composed in part of wool. (T. D. 6428.)

Under the acts of 1890 cotton gloves were held dutiable as wearing apparel and not as manufactures of cotton. (G. A. 546, T. D. 11187.) The same was true of so-called taffeta gloves of cotton, clocked with silk, cotton chief value. (G. A. 1540, T. D. 12989.) But taffeta gloves of cotton with silk threads of neat or thrown silk giving the gloves a silk face, the silk being the component of chief value, were classified as wearing apparel in chief value of silk. (G. A. 2144, T. D. 14145.)

Cotton gloves with silk points, consisting of plain rows of two or more strands of silk thread down the backs, were held dutiable as cotton wearing apparel embroidered. (G. A. 2584, T. D. 15007.)

Classification of cotton gloves as wearing apparel rather than as manufactures of cotton was continued under the act of 1894. (G. A. 2956, T. D. 15856.)

Gloves were held not to be garments, and men's cotton gloves having an elastic braid or band at the wristband for the purpose of holding them closely upon the wearer's wrists, were accordingly held under the act of 1897 not to be outside garments having india-rubber as a component material, because not a "garment." (G. A. 5023, T. D. 23356.)

Cotton gloves having three rows of stitching on the back, known as "kid point," were held not embroidered. (G. A. 4656, T. D. 22006.) But men's cotton gloves having four parallel lines of needlework near the top, giving the appearance of a scroll border, were declared both ornamental and useful and dutiable as embroidered wearing apparel. (G. A. 6461, T. D. 27663).

Gloves made of yarn, composed of cellulose filaments obtained from cotton waste by chemical treatment, were held dutiable by similitude as wearing apparel in chief value of cotton. (Thomass *v.* U. S., 1 Ct. Cust. Appls., 86.)

Cotton gloves knitted or woven needed not to be shaped by a weaving process nor knitted, fashioned, and shaped wholly by a machine to be classified under the provision in the act of 1909 for men's and boys' cotton gloves knitted or woven. (Spielmann *v.* U. S., 3 Ct. Cust. Appls., 368; Lehman Co. *v.* U. S., 5 Ct. Cust. Appls., 441.) But the provision was held not to include gloves lined with wool, which was declared to constitute a substantial and necessary part of the gloves and to enchance their value, add to their comfort and warmth, and aid in their sale. The provision for knitted articles in part of wool was held to govern classification. (U. S. *v.* Burne, 4 Ct. Cust. Appls., 298.)

Women's cotton gloves, not being specifically provided for, were held dutiable as cotton wearing apparel and not as manufactures of cotton under paragraph 324 of that act. (G. A. 7091, T. D. 30892.)

Women's gloves of cotton and silk, cotton chief value, were likewise classified. (Abstracts 33253, T. D. 33668 and 35852, T. D. 34548.)

An importation classified as men's and boys' gloves under paragraph 328 of the act of 1909 was found to be women's cashmere gloves dutiable under paragraph 324. (Abstract 35102, T. D. 34279.)

Gloves composed of cotton and rubber and used by electricians and linemen were held dutiable as wearing apparel under paragraph 256 of the act of 1913 as more specific than the provision for manufactures in chief value of rubber under paragraph 368. (Abstracts 37512 and 38390.)

Women's embroidered cotton gloves were held dutiable under paragraph 358 and not as cotton gloves. (Abstract 38251.)

Gloves classified as composed in chief value of silk at 50 per cent ad valorem under paragraph 317 of the act of 1913 were found to be in chief value of cotton and classified accordingly under paragraph 260. (Abstract 39964.)

COTTON KNIT WEARING APPAREL.

SUMMARY.

Knit cotton wearing apparel, exclusive of hosiery and gloves, consists largely of underwear. Although a considerable quantity of cotton is used in making knit outerwear—sweaters, toques, scarfs, etc.—it is usually in combination with wool or silk which, being a material of greater value, would govern in tariff classification.

The underwear industry is entirely independent of foreign resources, as the materials used, with the probable exception of relatively small amounts of fine-count yarns, are domestic, and the machinery, mostly of the circular type,[1] is built in this country. Moreover, the principal market for the product is the United States.

The American industry is well established, represented for the most part by large concerns, well equipped and efficiently conducted. Imports are insignificant compared with the total domestic output, being only about one-half of 1 per cent in 1914. However, as imports are concentrated in one class of goods—fine-grade underwear—there is more competition than appears from a comparison of total figures. These fine goods came principally from Germany and Switzerland; imports in recent years have been largely of coarser, cheaper articles from Japan.

TABLE 1.—*Cotton-knit wearing apparel—Summary table.*

Year.	Domestic production.	Imports for consumption.	Ratio of imports to production.	Imports for consumption, value.	Amount of duty.	Value per unit of quantity.	Actual or equivalent ad valorem rate.
Fiscal year:	*Dozens.*	*Dozens.*	*Per cent.*			*Per dozen.*	*Per cent.*
1910	[a] 24,614,758	159,575	0.6	$560,220	$330,555	$3.51	59.00
1911	.....	128,063	.....	433,941	261,110	3.39	60.00
1912	.....	105,160	.....	361,855	218,113	3.45	60.00
1913	.....	87,599	.....	304,701	184,282	3.48	60.00
1914	25,204,628	106,244	.4	341,972	114,027	3.22	33.00
1915	.....	78,241	.....	278,182	83,454	3.55	30.00
1916	.....	52,194	.....	181,947	54,584	3.49	30.00
1917	.....	57,039	.....	237,376	71,212	4.16	30.00
1918	[b] 34,963,800	37,226	.1	216,248	64,874	5.81	30.00
1919	.....	99,794	.....	676,332	202,899	6.78	30.00
1920	.....	24,329	.....	187,642	56,221	7.71	30.00
Calendar year:							
1920	.....	22,441	.....	193,119	57,936	8.61	30.00
1921	.....	31,526	.....	189,529	57,483	6.01	30.33
1922 (Jan. 1 to Sept. 21).	.....	5,367	.....	35,467	11,270	6.61	31.78

[a] Census figures, underwear only.
[b] Compiled by War Industries Board. Dry Goods Economist, Sept. 18, 1920, p. 71.

[1] See Tariff Information Survey, Textile Machinery.

GENERAL INFORMATION.

TARIFF ACT OF OCTOBER 3, 1913.

Par. 261. Shirts and drawers, pants, vests, union suits, combination suits, tights, sweaters, corset covers, and all underwear and wearing apparel of every description, not specially provided for in this section, made wholly or in part on knitting machines or frames, or knit by hand, finished or unfinished, not including such as are trimmed with lace, imitation lace, or crochet, or as are embroidered and not including stockings, hose and half hose, composed of cotton or other vegetable fiber, 30 per centum ad valorem.

DESCRIPTION.

Underwear.—The most important industry affected by paragraph 261 of the act of 1913 is the underwear industry. Knit underwear, like hosiery, may be classified according to the type of machine on which the knitting is done. Full-fashioned underwear, made on a flat-bed machine, is shaped in the knitting; cut underwear is cut from long tubes or webs of knitted fabric made on circular machines. Now that finishing machines have been brought to such perfection, the same superiority can not be claimed for full-fashioned underwear as for full-fashioned hosiery.[2] Quality is dependent upon the material used, the gauge of the knitting machine, and the workmanship throughout. As a matter of fact, full-fashioned underwear is usually of finer grade than "cut" underwear, but rather because of the yarn used and the labor expended than any intrinsic superiority in the process. The fit of a garment cut from tubular web fabric may be as perfect and the finish as excellent as of a full-fashioned article if the pattern used is satisfactory and the cutting done with accuracy and care and if the best seaming and overedging machines are used. One machine makes a perfectly flat elastic seam in which there is no overlapping of the material, the abutting edges being held firmly and neatly together by the interlocking of several parallel lines of stitching. As the production of circular underwear is much more rapid and cheaper than that of full-fashioned, it is more important in the United States. Knit underwear may be further classified according to the weight of the garment, the quality and finish of the material, and the stitch employed, but the above classifications represent the distinct lines of cleavage in the industry.

According to the nature of the fabric some of the more important classifications are flat, ribbed, fleece-lined, napped. "Flat" is a rather confusing term because it may apply to material knit on a flat, in contradistinction to a circular machine, but generally speaking the term "flat" when applied to finished underwear means a fabric in which the wales, or lines of knitted loops, all appear on the front or right side of the fabric, giving a smooth even surface, as opposed to ribbed in which some of the wales appear on the back of the fabric and some on the front, giving a distinctly lined or ribbed surface. Ribbing is produced by two sets of needles operating simultaneously, one set forming the loops which appear on the inner surface of the fabric and the other set forming the loops on the outer surface; by arranging the needles any desired grouping of ribs may be effected.

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[2] See Cotton Hosiery, p. 8.

When some needles are left out of the machine a thinner and more open fabric is produced. If a sufficient number are omitted the resultant product will be gauze. Either a ribbed or a flat fabric may be napped by passing it over a special machine, which raises the fiber. Fleece lining is obtained by the introduction of a separate yarn, usually loosely spun, on the back of the material and the application of the napping process which will act more directly on this extra yarn.

Competing articles.—So popular has men's "athletic" underwear made from woven material become that it is now a very definite competitor of knit goods. In women's lines the increasing vogue for silk—glove silk, crêpe de chine, habutai—has somewhat retarded the development of cotton knit goods.

Other wearing apparel.—Besides underwear, bathing suits, sweaters, and sometimes toques and scarfs are knit of cotton. No statistics for any of these articles are given separately as cotton products, hence only general conclusions can be made in this discussion concerning wearing apparel other than underwear. Cotton goods in these articles are usually cheap grades, as the better class of goods are made of wool or silk.

DOMESTIC PRODUCTION.

Materials.—Cotton yarn in all grades, carded, combed, mercerized, is used by the knit-underwear industry. Most of the domestic underwear is made from yarns ranging from 8's to 80's, whereas that imported prior to 1914 was usually in yarn of finer counts; in the last few years imports of coarser goods from Japan have increased. Philadelphia is the principal market for knitting yarns, but many southern mills buy their yarns locally and, as in the hosiery industry, large mills frequently have their own spinning departments. Very little imported cotton yarn is used. In 1914 the hosiery and underwear industries imported 1,006,176 pounds of cotton yarn and in 1918, 272,238 pounds,[3] a very small part of the total used which approximates 300,000,000 pounds.

Linen, or vegetable fiber, other than cotton, is used in the knit-underwear industry to a very limited extent. Linen yarn is not so well adapted to the knitting process as are cotton, wool, and silk, being harsher and less pliable. The quantity of linen, jute, and other unspecified fibers, used in the entire knit goods industry in census years was as follows: 116,160 pounds in 1899; 62,617 pounds in 1904; 241,754 pounds in 1909; and 70,278 pounds in 1914. The quantity of these fibers used in 1914 amounted to only 0.02 per cent of the material used by the entire knit-goods industry. Separate figures for yarn consumed by the underwear industry are not available.

Besides yarn, the underwear industry requires finishings such as buttons, bandings, tapes, ribbons, laces. These, however, form a small part of the material cost.

Cost of production.—A report of the Department of Commerce published in 1915 [4] shows the relation of the various items entering

[3] Cotton yarn, Tariff Information Series No. 12.
[4] The Knit-Underwear Industry, Misc. Series, No. 32.

into the cost of knit-underwear manufacture. The summary table[5] shows the total manufacturing cost divided as follows:

	Group of mills in—		
	New York and Massachusetts.	Pennsylvania and Ohio.	Maryland, North Carolina, and Tennessee.
	Per cent.	*Per cent.*	*Per cent.*
Raw material	64.97	67.83	72.16
Direct labor	24.11	20.34	14.37
Indirect labor	3.40	3.71	5.89
Overhead	7.52	8.12	7.58
Total	100.00	100.00	100.00

These proportions may vary somewhat at the present time, but in general they hold true.

It is significant that northern mills show a proportionately higher labor cost than southern mills. This results partly from higher wage rates but largely from the fact that more expensive grades of goods are made in northern mills, and although the material costs on such goods are actually more, relatively they are less, because the greater skill required in all processes of manufacture gives a labor cost which more than offsets the amount paid for material. Even in a given locality the wages of knitters vary according to the fineness of the yarn on which they work, and, moreover, production on a fine-gauge machine is slower than on one of coarse gauge; thus two elements tend to increase the cost of labor per unit of output proportionately to the fineness of the material.

Organization.—It will be seen from the above discussion of standardization that quantity production would be more profitable than production on a small scale. So it is that there are fewer small underwear mills than small hosiery mills. (See Cotton hosiery, p. 13).

The following table shows that the cotton-underwear industry, like the cotton-hosiery industry, is more or less specialized, only a small proportion of the total output being produced in mills that are not primarily underwear mills:

TABLE 2.—*Production of cotton knit underwear, by type of establishments.*

Made in—	Quantity.	Per cent of total quantity.	Value.	Per cent of total value.
	Dozen pairs.			
Underwear mills	21,406,374	96.54	$137,966,960	96.02
Fancy knit-goods mills	418,931	1.89	3,418,126	2.38
Knitted-cloth mills	349,174	1.57	2,301,333	1.60
Total	22,174,479	100.00	143,687,019	100.00

The machines used in making underwear are generally the large circular machines on which fabric for other purposes may be made. Hence it so happens that the value of the knit fabric for other pur-

[5] Ibid., Table 32, p. 74, gives percentages based on total cost of goods manufactured and selling expense. The figures given here are derived from the same table, but based on the cost of manufacturing only.

poses may be greater than the value of the underwear produced by a mill.

Equipment.—The equipment in the underwear industry includes a number of expensive machines. These are practically all the result of American ingenuity, and all types are made in this country. The circular underwear machine has undergone little change or improvement in the last 20 years, but the electric cutting, the seaming, and the finishing machines which play an important part in the manufacture of cut goods have been perfected both in facility of operation and in the results accomplished.

Methods of production.—Standardization in the underwear industry while perhaps not essential has been an important element of success in this country. After the material is knit and the garment cut, the seaming and finishing processes are numerous and while mechanical are not automatic. This necessitates frequent handling of the garment between the cutting and the shipping departments, hence the greatest individual efficiency and the highest productive capacity are attained by subdivision of labor. A girl masters thoroughly the type of machine she is required to operate, and working always on one part of the garment handles it with greater dexterity. One girl will attach the cuffs only, another sews the shoulder seams, another the body seams, and so on until all the operations are completed. The same kinds of seams are not used for all parts of the garment, and even though the character of the seam may be the same, various attachments are added to the machines to facilitate manipulation of the article. It may be seen that standardization is highly desirable, partly because of the machinery, but more largely because of the increased speed of the operative, who doing the same piece of work day after day, becomes increasingly efficient. The wages are on a piecework basis, so that increased efficiency accrues immediate benefit to the operative. This does not always work out in practical application because a very general increased efficiency may be followed by a lowering of piecework rates.

Foreign processes on a given grade of goods are not essentially different from the American, but more full-fashioned goods are made in Europe than in the United States. In France, in some cases, the industry frequently has two phases, the knitting of the tubular fabric in one establishment and the manufacture of the garment in another.

Geographical distribution.—New York is the leading State in the manufacture of cotton underwear. The principal centers are Utica and Amsterdam. Other States which have large cotton underwear mills are North Carolina, Georgia, Tennessee, and Pennsylvania.

Domestic production and consumption.—The cotton-underwear industry in 1919 produced 22,174,479 dozen garments, valued at $143,687,019, and in 1914, 25,204,628 dozen garments, valued at $68,715,752. The decrease in quantity is not so great as these figures seem to indicate, because the 1919 production included 7,518,516 dozen combination suits, the 1914 only 5,468,730 dozen. There was such a large production in 1918 by reason of the demands for the Army and Navy that a considerable surplus probably remained to be absorbed in 1919.

Figures compiled by the War Industries Board show that 26,219,375 dozen shirts and drawers (about 8,000,000 dozen for the Government) and 8,744,425 dozen union suits, a total of 34,963,800 dozen garments, were made in 1918.

From 1899 to 1914 the output of the industry increased about 100 per cent, while the value of the output increased almost 200 per cent. The increase in value of output in 1914 over 1909 was 15 per cent. The combination suit is steadily gaining in popularity, showing an increase of 167 per cent in quantity over 1909, whereas there was a decrease of nearly 13 per cent in the number of shirts and drawers. The quantity of union suits produced represented 8 per cent of the total cotton underwear in 1909, 22 per cent in 1914, and, according to the War Industries Board figures, 25 per cent in 1918. Because of the prevalence of modern heating systems, lighter weight goods are required. This may be one reason why woven goods are competing strongly with knit goods.

Unlike cotton hosiery, cotton underwear has increased relatively as well as actually—representing 59 per cent of the entire value of the underwear industry in 1899, 70 per cent in 1904, 71 per cent in 1909, and 74 per cent in 1914, gaining somewhat in favor over wool mixed.

Domestic exports.—American underwear manufacturers profited especially in export markets by their foreign competitors' disadvantage during the war. In 1914 exports of all cotton knit goods, which included underwear, were valued at $2,546,822; in 1918, the first year stated separately, exports of cotton knit underwear alone were valued at $2,602,293.

In the calendar year 1920 they amounted to $14,067,839. Thus foreign trade fell to a value of $3,602,493 in 1921, which, however, was still above the pre-war level. The markets for cotton underwear, as for cotton hosiery, are scattered through practically all of the countries of the world. The United Kingdom, Australia, Cuba, and Argentina were the most important consumers of American goods in 1920, the trade with each of which amounted to over $1,000,000. The decline in American export trade is probably due entirely to the condition of business the world over, as there has not been sufficiently aggressive foreign competition to drive American goods out of these markets.

Few manufacturers of women's underwear find the export trade profitable, because the character, quality, and style of garment demanded for the export trade are altogether different from that made for the American market. This is less true of men's underwear.

FOREIGN PRODUCTION.

Besides the United States, the leading countries manufacturing knit cotton underwear are Switzerland, Germany, France, England, and Japan. The Swiss make a fine grade specially for the export trade for which they find a good market in England and the British colonies and even in the United States. In 1913 Swiss exports of cotton knit goods other than gloves and hosiery were valued at $597,142 (franc = $0.193); by 1919 exports had increased in value nearly 700 per cent, equaling $4,796,992 [6] (converted at the same rate). Of course, the increase in the volume of trade was not actually what these figures on the surface indicate, because prices were higher and exchange was variable in 1919. The maximum quantity was exported in 1917, but because of the difficulty of trading with Germany, which previously received large amounts of cotton goods,

[6] L'Exportateur Suisse (periodical), March, 1920.

and the import restrictions in England, the Swiss exports of cotton knit goods were less in 1918 and in 1919 than in 1917.

Total German exports of cotton knit underwear prior to the war were very much greater than exports from Switzerland, amounting to $9,912,700 in 1913; Great Britain was the most important market for the German export trade; only a small proportion went to the United States. Apparently the German cotton knit underwear industry in the spring of 1922 had not attained its pre-war status, judging from the following statistics:

TABLE 36.—*German exports of cotton knit underwear.*

Exported to—	January–December, 1913.	May, 1921, to April, 1922.	January to December, 1922.	Exported to—	January–December, 1913.	May, 1921, to April, 1922.	January to December, 1922.[1]
	Pounds.	*Pounds.*	*Pounds.*		*Pounds.*	*Pounds.*	*Pounds.*
Saar Basin	.....	430,999	459,659	United States	9,348	(2)	(2)
Great Britain	8,863,815	1,421,747	3,600,112	Other countries	4,637,517	1,026,241	1,721,793
Netherlands	725,745	829,591	1,413,589				
Switzerland	276,236	114,860	93,255	Total	14,872,452	3,892,883	7,468,303
Turkey	359,791	75.397	179,895				

[1] No statistics available for first 4 months of 1921. [2] Included in "other countries."

Exports of cotton knit goods from the United Kingdom have not varied greatly, averaging about $2,000,000 annually from 1913 to 1918. Japan built up an extensive trade in cotton knit underwear during the war, but recent recessions in foreign markets indicate that the Japanese industry will lack sufficient stability to compete with Europe and America. Like the cotton hosiery made in Japan, the underwear is said to be of inferior grade and very imperfect cut and finish.

IMPORTS.

In the last census year, 1914, imports of cotton knit goods, exclusive of hosiery and gloves, amounted to 106,251 dozen, as compared with a domestic production of 25,204,628 dozen. The value of the imported articles was $341,983, which was only 0.5 per cent of the value of cotton underwear produced in this country. According to the War Industries Board figures for domestic production, imports were only one-tenth of 1 per cent of the American output in 1918. The greatest amount imported in the last three decades was 259,114 dozen, valued at $810,033, in 1907. This value was exceeded in 1919, although the quantity was about one-third less, the unit value in 1907 being $3.13 per dozen, and in 1919 $6.78. Imports for 1920, 24,329 dozen, valued at $187,645, were the smallest in the last 30 years. Since 1891 imports have averaged between 150,000 and 200,000 dozen. It is interesting to note that imports tended to increase under the act of 1897 (1898–1909) and to decrease under the act of 1909 (1910–1913), although the classifications and rates were identical under the two acts. (Tables 6 to 8, pp. 68 to 72.)

Imports by countries (Table 5, p. 67) from 1914 to 1918 include gloves. As the imports of gloves (judging by imports for consumption) were three or four times the imports of other cotton knit goods, figures for 1914 and succeeding years are not comparable with figures for previous years.

Practically all of these gloves prior to the war came from Germany, hence the relation of each country to the total is decidedly altered by their inclusion in cotton knit goods statistics. Prior to the act of 1913 about one-third of the cotton knit goods, consisting largely of underwear, came from Germany, one-third from Switzerland, and practically all of the remainder from France, England, and Denmark, in the order named. Since 1914 the proportion of goods from Japan has increased, but the total quantity has not been large.

One large American underwear mill could produce in a few months as many knit cotton garments as are imported into this country in one year.

PRICES.

Because of the great variety of knitted underwear and the fact that there are no regular market quotations, it is practically impossible to follow a given line of goods over a series of years. Price trend is about all that can be indicated and that is not uniform in all grades of goods. Men's balbriggans, which according to the War Industries Board price study (Table 11, p. 73) were $3.25 per dozen wholesale in 1913 and $7.0625 in 1918, are now offered at the 1913 price. An extract from the official organ of the National Hosiery and Underwear Manufacturers' Association shows price fluctuations within the last year:[1]

> A line of union suits which went on the market last year for the spring, 1920, at $17 a dozen and during the season advanced to $22, is priced $12 for spring, 1921. The price is based on reduced operating costs—wage reductions, increased working hours, cotton bought at the lowest price in several years, and with the mill running to capacity, minimum overhead and the promise of maximum efficiency.

The relation of present (January, 1921) to pre-war price is indicated by the following from the same source:

> In each of several lines of underwear the prices for spring are approximately 50 per cent above the high pre-war average. A knitted garment priced $8 a dozen in 1915 and sold for some time at or about that figure is priced $12 for next spring. It formerly was made from carded yarn, whereas now it is of combed, so that relatively the price is not 50 per cent higher than in 1915.

TARIFF HISTORY.

The act of 1883 (par. 323) imposed a duty of 40 per cent ad valorem upon shirts and drawers fashioned, narrowed, or shaped by knitting machines or frames or knit by hand. Shirts and drawers not otherwise provided for were dutiable at 35 per cent ad valorem (par. 322).

The act of 1890 divided cotton knit underwear into five value classifications bearing compound rates of duty on all except the lowest, which was 35 per cent ad valorem. These rates were the highest in tariff history on this class of goods, averaging for the three full years under this act, 1892–1894, an actual equivalent ad valorem duty of 68 per cent.

In accordance with the general policy of the act of 1894 these rates were reduced and the classifications thrown into one, dutiable at 50 per cent ad valorem. This did not have the effect of stimulat-

[1] Knit Goods Bulletin, December, 1920, p. 292.

ing imports, which in the highest year were 168,804 dozen articles as compared with an importation of 194,083 dozen articles in 1893 under the higher rates of the act of 1890.

The act of 1897 restored the value classifications and the compound rates, although these were somewhat lower than in the act of 1890. The description was altered, making the paragraph possibly slightly more inclusive. Again the change in rates had apparently little effect upon imports, which continued about the same for several years and increased (with rates from 10 to 12 per cent above the preceding act) from 1902 to 1908. The greatest quantity imported in any year was 259,114 dozen in 1907. The provisions of the act of 1909 were identical with those of the act of 1897, but imports steadily decreased, amounting to only 105,160 dozen in 1912 and 87,599 dozen in 1913, which shows that the domestic industry with an output of over 25,000,000 dozen garments in 1914 held a secure position in the home market.

It is interesting to note the effect which the various classifications of these acts had upon the character of imports.[8] The lowest classification, viz, that of "not over $1.50" value per dozen articles was dutiable at a minimum equivalent ad valorem rate of 55 per cent. Imports under that class were comparatively small, from 12 to 15 per cent of the total, probably the strength of domestic manufacturers in the very cheap lines precluding competition.

In the next class, namely, that valued at over $1.50 to $3 per dozen, the equivalent ad valorem rates range from the highest, 88 per cent ($1.10+15 per cent on a value of $1.50), to almost the lowest, 52 per cent ($1.10+15 per cent on a value of $3), under the paragraph. Imports under this classification are the largest, representing over 50 per cent of the total quantity, and quite naturally the unit values more nearly approach the upper limit. (Table 7, p. 69.) The rates under the next classification ($3 to $5) might vary from 50 per cent to 75 per cent. This class was second in importance, averaging 25 per cent of the total imports. Although the rates tend to diminish above the $5 value, imports in these classes are relatively small because of the narrower market for high-priced goods.

The act of 1913 about halved the average rates under the two last acts, levying a flat rate of 30 per cent without value classifications. Imports under this act have never equaled the lowest years under the acts of 1897 and 1909 (except the one year 1913). Even in 1920, a year which showed increased imports in many lines, only 24,329

[8] The following outline shows the possible range of rates in each classification of the acts of 1897 and 1909:

Rate of duty.	Value.	Equivalent rates.	
		Ad valorem.	Specific.
	Dozen.	*Per cent.*	*Dozen.*
$0.60 plus 15 per cent	$1.50	55	$0.82
$1.10 plus 15 per cent	$1.50–3.00	88	1.33
		52	1.55
$1.50 plus 25 per cent	3.00–5.00	75	2.25
		55	2.75
$1.75 plus 35 per cent	5.00–7.00	70	3.50
		60	4.20
$2.25 plus 35 per cent	7.00–15.00	67	4.92
		50	7.50
50 per cent	15.00	50	7.50

dozen cotton knitted undergarments of foreign origin were landed in this country.

The annual revenue received from this item has never been as much as one-half million dollars.

The duty on manufactures of long-staple cotton under the emergency tariff act of May 27, 1921, applied to underwear made of this type of cotton. According to the records, while that act was enforced a very small proportion of the imported underwear was made of long-staple cotton.

The act of 1922 levies a flat rate of 45 per cent ad valorem on cotton knit underwear and wearing apparel other than gloves and hosiery.

COMPETITIVE CONDITIONS.

It is evident that there is little foreign competition, considering the cotton knit wearing apparel industry as a whole, since imports amount to only about one-half of 1 per cent of the domestic production. But these imports are more or less of one class of goods—fine underwear—and do, therefore, compete to some extent with domestic manufactures of the same grade.

The American knitting industry is independent of foreign markets for its yarns.

> Even in 1914 the imports constituted only a fraction of 1 per cent of the cotton yarns consumed by the domestic knitting industry, and local yarns had so steadily improved that there was no very strong reason for continuing imports except on the high counts or for special purposes.[9]

In fact, it is quite possible that American manufacturers have an advantage as regards raw material. The study quoted above states:[10]

> German spinners could not compete in the American market either with the domestic coarse yarns or with the fine special yarns from England, and their sales in the United States * * * were mainly due to special finish—fast dyeing, high polishing, or careful mercerizing.

This, of course, does not necessarily indicate that the German yarn-consuming industries must import their material, but it seems evident that there can not be much expansion in the industry without importation. Switzerland is in somewhat the same position. England, which manufactures the bulk of the fine yarns of commerce, is not a serious competitor in cotton knit underwear.

The condition which most adversely affects the American manufacturer is the difference in wage rates here and abroad. That, however, is in great measure overcome by the American industrial system. By standardization of product and division of labor the total production and the efficiency of the individual laborer is increased. This militates to some extent against the success of the American manufacturer in the export trade, because whereas the standardized article is well received in the domestic market, the foreign trade requires a variety of product, different in style, weight, quality, and finish not only to meet differences in climate, but to suit the popular taste in each locality.

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[9] Cotton yarn, Tariff Information Series, No. 12, p. 101.
[10] Ibid., p. 258.

Statistical Tables.

TABLE 4.—*Cotton knit wearing apparel—Underwear—Production in United States.*

[From Federal Census.]

State and article.	1899		1904	
	Quantity.	Value.	Quantity.	Value.[1]
Shirts and drawers:	*Dozens.*		*Dozens.*	
New York	6,636,642	$17,006,721	8,974,368	.....
Pennsylvania	2,670,341	3,456,695	3,852,513	.....
Massachusetts	852,167	2,304,872	1,098,633	.....
Virginia	580,744	1,108,780	733,761	.....
North Carolina	112,875	196,220	(2)	.....
Michigan	303,955	420,716	519,984	.....
Connecticut	159,169	446,073	112,108	.....
New Jersey	95,035	190,066	135,815	.....
Georgia	205,165	432,329	425,000	.....
Rhode Island	102,506	259,910	(2)	.....
All other States	339,832	1,060,520	1,255,776	.....
Total	12,058,431	26,882,902	17,107,958	$39,658,762
Combination suits:				
New York	288,079	904,154	655,324	.....
Pennsylvania	374,057	702,523	271,069	.....
Ohio	11,517	73,052	55,823	.....
Massachusetts	12,069	96,406	53,825	.....
Michigan	4,034	51,300	(2)	.....
All other States	134,876	413,131	224,260	.....
Total	824,632	2,240,566	1,260,301	4,478,664
Grand total	12,883,063	29,123,468	18,368,259	44,137,426

State and article.	1909		1914		1919	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Shirts and drawers:	*Dozens.*		*Dozens.*		*Dozens.*	
New York	11,238,711	$29,577,805	8,466,807	$22,704,651	6,041,257	$37,411,522
Pennsylvania	6,552,364	8,833,761	6,340,164	8,008,691	5,035,935	14,587,505
Massachusetts	1,415,227	4,257,591	1,142,782	3,408,500	926,583	5,601,905
Virginia	725,509	1,865,171	838,056	2,276,864	347,391	2,036,780
North Carolina	409,635	(2)	686,519	1,790,605	417,219	3,559,166
Michigan	692,266	620,888	816,960	769,764	695,514	1,413,178
Connecticut	113,603	475,545	131,988	486,518	44,962	373,115
New Jersey	133,992	330,689	150,908	411,524	109,726	814,505
Georgia	314,893	573,020	185,600	396,715	38,291	283,037
Rhode Island	110,443	(2)	133,809	373,889	77,356	504,970
All other States	860,478	3,473,128	842,305	2,470,216	921,729	5,969,950
Total	22,567,121	50,007,598	19,735,898	43,097,937	14,655,963	72,564,633
Combination suits:						
New York	938,554	4,238,442	2,528,302	11,099,564	2,731,093	29,205,961
Pennsylvania	412,567	1,155,327	1,388,936	3,918,534	2,172,792	13,074,126
Ohio	131,186	1,047,775	219,704	2,165,308	54,745	658,636
Massachusetts	100,024	861,787	238,256	1,695,784	262,626	3,300,339
Michigan	50,062	(2)	103,588	603,206	88,946	908,396
All other States	415,244	2,410,266	989,944	6,135,149	2,208,314	23,974,428
Total	2,047,637	9,713,597	5,468,730	25,617,815	7,518,516	71,122,386
Grand total	24,614,758	59,721,195	25,204,628	68,715,752	22,174,479	143,687,019

[1] Not given by States.

[2] Included in "All other."

TABLE 5.—*Cotton knit goods other than hosiery—Imports by countries.*

[Fiscal years.]

Imported from—	1910	1911	1912	1913	1914	1915
Denmark	$25,749	$24,420	$21,568	$15,293	$3,861	$13,552
France	152,706	108,921	65,060	66,803	113,623	39,804
Germany	216,988	196,751	171,957	132,836	2,216,335	2,370,963
Switzerland	205,262	191,367	162,685	135,497	123,640	146,504
England	42,362	35,494	38,661	33,921	65,093	56,386
Canada	52	29	87	70	102	54
Japan	488	154	71	249	547	269
All other countries	3,365	4,226	1,637	898	4,017	25,114
Total	646,972	561,362	461,726	385,567	2,527,218	2,652,646

Imported from—	1916	1917	1918
Denmark	$18,624	$5,652	$13,756
France	20,065	23,011	25,430
Germany	1,050,526	41,028	
Switzerland	117,129	168,071	97,808
England	22,641	32,764	45,326
Canada	1,122	23	24,677
Japan	9,755	19,685	675,297
All other countries	23,325	10,482	872
Total	1,263,187	300,716	883,166

Imported from—	1919[1]		1920[1]	
	Quantity.	Value.	Quantity.	Value.
	Dozens.		*Dozens.*	
France	1,543	$15,147	45	$1,005
Switzerland	22,357	144,539	15,327	120,839
United Kingdom	1,657	28,790	1,302	21,151
Canada	70,043	475,733	261	2,422
Japan	11,788	50,478	14,619	77,857
All other countries	221	1,554	52	691
Total	107,609	716,241	31,606	223,965

[Calendar years.]

Imported from—	1920[2]		1921[2]		Jan. 1 to Sept. 21, 1922.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Dozens.		*Dozens.*		*Dozens.*	
Denmark	1	$10	2	$12		
France	72	671	130	1,316	2	$58
Germany			7,421	39,029	1,197	7,013
Switzerland	17,354	135,975	21,931	119,922	456	2,004
United Kingdom	2,847	40,313	1,616	22,899	2,021	27,295
Canada	261	2,416	11	121		
Japan	1,399	6,289	57	594	697	2,626
All other countries	17	346	354	5,611	40	478
Total	21,951	186,020	31,522	189,504	4,413	39,474

[1] Not including gloves, separately stated after 1918.
[2] Not including gloves, separately stated after 1918. Table 7.

TABLE 6.—*Cotton knit wearing apparel—Total imports for consumption—Revenue.*

Year.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.	Duty collected per dozen.
Fiscal year:	*Dozens.*				*Per cent.*	
1891	158,967	$831,753	$493,724	$5.23	59.36	$3.10
1892	162,681	568,407	391,951	3.49	68.96	2.41
1893	194,083	631,892	429,994	3.26	68.05	2.21
1894	121,439	401,111	266,957	3.30	66.55	2.20
1895	149,251	490,176	246,917	3.28	50.37	1.65
1896	168,804	523,403	261,702	3.10	50.00	1.55
1897	161,751	503,761	251,881	3.11	50.00	1.56
1898	114,528	334,344	206,602	2.92	61.79	1.80
1899	160,311	456,358	288,110	2.85	63.13	1.80
1900	159,684	490,835	297,023	3.01	61.77	1.86
1901	173,476	529,762	326,854	3.05	61.70	1.88
1902	205,967	632,295	389,212	3.07	61.56	1.89
1903	199,349	657,270	398,347	3.30	60.61	2.00
1904	190,990	614,010	373,688	3.21	60.86	1.96
1905	203,118	612,389	376,195	3.01	61.43	1.85
1906	254,616	792,412	485,460	3.11	61.26	1.91
1907	259,114	810,033	490,721	3.13	60.58	1.89
1908	205,695	661,393	399,974	3.22	60.47	1.94
1909	146,161	459,611	280,070	3.14	60.94	1.92
1910	159,611	560,226	330,557	3.51	59.00	2.07
1911	128,065	433,942	261,112	3.39	60.17	2.04
1912	105,163	361,857	218,117	3.44	60.28	2.07
1913	87,603	304,703	184,285	3.48	60.48	2.10
1914	106,251	341,983	114,031	3.22	33.34	1.07
1915	78,291	278,327	83,489	3.56	30.00	1.07
1916	52,194	181,947	54,584	3.49	30.00	1.04
1917	[1] 57,130	[1] 239,496	71,213	4.19	29.73	1.25
1918	37,226	216,248	64,874	5.81	30.00	1.74
1919	[2] 101,196	[2] 694,195	204,100	6.86	29.40	2.02
1920	[3] 24,329	[3] 187,642	56,221	7.71	30.00	2.31
Annual average	144,224	493,059	276,599	3.42	56.09	1.92
Calendar year:						
1920	22,441	193,119	57,936	8.61	30.00	2.58
1921 [4]	31,526	189,529	57,483	6.01	30.33	1.82
1922 (Jan. 1 to Sept. 21)	5,367	35,467	11,270	6.61	31.78	2.09

[1] Includes 91 dozen pieces valued at $2,120, admitted free of duty.
[2] Includes 1,402 dozen pieces valued at $13,863 admitted free of duty.
[3] Includes 9 dozen pieces valued at $238, admitted free of duty.
[4] Includes 2,911 dozen, equivalent to 9,510 pounds, valued at $27,049, imported under the emergency tariff act of May 27, 1921; and 4 dozen, valued at $138, from Philippine Islands free of duty.

TABLE 7.—*Cotton knit wearing apparel—Imports for consumption—Revenue.*

VALUED AT NOT MORE THAN $1.50 PER DOZEN.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Dozens.				*Per cent.*
1891 [1]	35 per cent	15,957	$18,067	$6,323	$1.13	35.00
1892	do	16,957	20,712	7,249	1.22	35.00
1893	do	30,601	39,629	13,870	1.30	35.00
1894	do	26,533	35,879	12,557	1.35	35.00
1895 [2]	do	1,864	2,200	770	1.18	35.00
1896		[3]	[3]			
1897		[3]	[3]			
1898 [4]	60 cents per dozen plus 15 per cent.	15,981	20,469	12,658	1.28	61.84
1899	do	24,376	29,623	19,089	1.22	64.37
1900	do	27,205	35,117	21,591	1.29	61.48
1901	do	28,042	37,926	22,514	1.35	59.36
1902	do	38,529	50,700	30,722	1.31	60.60
1903	do	36,711	47,853	29,205	1.30	61.00
1904	do	28,706	39,213	23,105	1.37	58.92
1905	do	30,461	42,214	24,609	1.38	58.29
1906	do	39,639	56,095	32,197	1.42	57.43
1907	do	41,629	59,609	33,919	1.43	56.89
1908	do	28,496	40,906	23,234	1.44	56.79
1909	do	26,044	37,379	21,233	1.44	56.81
1910	do	32,540	46,661	26,521	1.43	56.84
1911	do	27,187	39,057	22,170	1.44	56.77
1912	do	21,814	31,828	17,862	1.46	56.12
1913	do	15,553	22,496	12,705	1.45	56.50
1914 [5]	do	1,804	2,653	1,480	1.47	55.80

VALUED AT MORE THAN $1.50 AND NOT MORE THAN $3 PER DOZEN.

1891 [1]	$1 per dozen plus 35 per cent.	60,644	$160,457	$116,804	$2.64	72.79
1892	do	69,388	186,747	134,749	2.69	72.16
1893	do	80,730	220,073	170,256	2.56	74.60
1894	do	44,315	112,810	83,799	2.55	74.28
1895 [2]	do	1,915	3,940	3,294	2.06	83.62
1896		[3]	[3]			
1897		[3]	[3]			
1898 [4]	$1.10 per dozen plus 15 per cent.	61,860	145,238	89,845	2.35	61.08
1899	do	90,740	205,047	130,721	2.27	63.44
1900	do	84,530	196,348	122,435	2.32	62.36
1901	do	92,673	220,385	135,073	2.38	61.15
1902	do	97,715	234,485	142,660	2.40	60.84
1903	do	91,549	222,844	134,131	2.43	60.19
1904	do	95,977	232,523	140,454	2.32	60.40
1905	do	109,584	280,704	159,648	2.37	61.24
1906	do	127,399	208,681	185,691	2.38	61.15
1907	do	124,344	327,214	196,861	2.40	60.16
1908	do	110,518	270,904	162,205	2.45	59.26
1909	do	72,924	174,138	105,338	2.39	61.67
1910	do	66,646	173,685	99,364	2.61	57.21
1911	do	50,456	124,645	74,198	2.47	59.53
1912	do	42,062	100,411	61,330	2.39	61.09
1913	do	34,520	83,562	50,507	2.42	60.44
1914 [5]	do	3,299	7,976	4,826	2.42	60.51

[1] From Oct. 6, 1890, to June 30, 1891.
[2] From July 1 to Aug. 28, 1894.
[3] Not classified according to value under the act of 1894. See Table 8.
[4] From July 24, 1897, to June 30, 1898.
[5] From July 1 to Oct. 3, 1913.

TABLE 7.—*Cotton knit wearing apparel—Imports for consumption—Revenue*—Contd.

VALUED AT MORE THAN $3 AND NOT MORE THAN $5 PER DOZEN.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Dozens.				*Per cent.*
1891 [1]	$1.25 per dozen plus 40 per cent.	61,589	$238,944	$172,564	$3.88	72.32
1892	do	53,903	195,651	145,639	3.63	74.44
1893	do	48,030	182,695	133,115	3.80	72.86
1894	do	32,480	125,811	90,925	3.87	72.27
1895 [2]	do	515	1,568	1,271	3.05	81.07
1896		[3]	[3]			
1897		[3]	[3]			
1898 [4]	$1.50 per dozen plus 25 per cent.	20,118	77,296	49,497	3.84	64.03
1899	do	32,435	128,986	80,900	3.98	62.72
1900	do	33,331	138,068	84,513	4.14	61.21
1901	do	33,657	134,019	83,990	3.98	62.67
1902	do	49,391	196,040	123,097	3.97	62.80
1903	do	49,233	195,637	122,759	3.97	62.85
1904	do	47,445	188,409	118,270	3.95	62.77
1905	do	47,122	185,265	116,999	3.93	63.15
1906	do	65,165	262,263	163,314	4.02	62.27
1907	do	59,637	244,842	150,666	4.18	61.54
1908	do	45,204	184,238	113,866	4.08	61.80
1909	do	32,274	129,655	80,825	4.02	62.34
1910	do	39,614	161,547	99,808	4.08	61.78
1911	do	34,022	137,583	85,430	4.04	62.09
1912	do	26,819	109,335	67,563	4.07	61.79
1913	do	25,609	105,242	64,724	4.11	61.50
1914 [5]	do	2,871	11,682	7,227	4.07	66.87

VALUED AT MORE THAN $5 AND NOT MORE THAN $7 PER DOZEN.

1891 [1]	$1.50 per dozen plus 40 per cent.	12,210	$72,419	$47,283	$5.93	65.29
1892	do	13,343	81,275	52,524	6.09	64.62
1893	do	19,177	112,402	73,726	5.86	65.59
1894	do	14,374	87,163	56,427	6.06	64.74
1895 [2]	do	252	1,526	989	6.04	64.83
1896		[3]	[3]			
1897		[3]	[3]			
1898 [4]	$1.75 per dozen plus 35 per cent.	6,647	39,137	25,331	5.88	64.72
1899	do	8,293	47,031	30,973	5.67	65.86
1900	do	9,312	55,460	35,708	5.95	64.38
1901	do	12,847	75,966	49,070	5.93	64.59
1902	do	12,168	70,180	45,858	5.76	65.33
1903	do	8,225	50,193	31,962	6.10	63.68
1904	do	8,418	50,906	32,548	6.05	63.94
1905	do	7,896	47,415	30,414	6.00	64.15
1906	do	11,936	72,367	46,216	6.06	63.86
1907	do	12,350	73,778	47,435	5.97	64.29
1908	do	11,542	69,980	44,693	6.06	63.86
1909	do	7,050	42,813	27,323	6.07	63.82
1910	do	10,863	66,198	42,179	6.09	63.72
1911	do	8,467	51,584	32,872	6.09	63.73
1912	do	7,132	43,338	27,650	6.08	63.80
1913	do	6,710	40,473	25,909	6.03	64.02
1914 [5]	do	1,077	6,629	4,205	6.15	63.44

[1] From Oct. 6, 1890, to June 30, 1891.
[2] From July 1 to Aug. 28, 1894.
[3] Not classified according to value under the act of 1894.
[4] From July 24, 1897, to June 30, 1898.
[5] From July 1 to Oct. 3, 1913.

TABLE 7.—*Cotton knit wearing apparel—Imports for consumption—Revenue*—Contd.

VALUED AT MORE THAN $7 AND NOT MORE THAN $15 PER DOZEN.[1]

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Dozens.				*Per cent.*
1891 [2]	$2 per dozen plus 40 per cent.	8,567	$33,977	$50,725	$9.80	60.40
1892	do	9,090	84,021	51,789	9.24	61.64
1893	do	6,545	67,093	39,926	10.25	59.51
1894	do	3,735	39,446	23,249	10.56	58.93
1895 [3]	do	108	954	598	8.83	62.66
1896		[4]	[4]			
1897		[4]	[4]			
1898 [5]	$2.25 per dozen plus 35 per cent.	3,384	29,402	17,907	8.69	60.91
1899	do	4,289	36,941	22,580	8.61	61.12
1900	do	5,304	47,210	28,458	8.90	60.28
1901	do	6,256	55,693	33,569	8.90	60.27
1902	do	7,876	75,297	44,077	9.56	58.54
1903	do	12,916	127,625	73,730	9.88	57.77
1904	do	9,732	93,793	54,726	9.64	58.35
1905	do	7,370	69,717	40,984	9.46	58.79
1906	do	10,036	90,312	54,192	9.00	60.01
1907	do	10,834	98,890	58,988	9.13	59.65
1908	do	9,318	84,520	50,548	9.07	59.81
1909	do	7,515	69,140	41,107	9.20	59.40
1910	do	7,436	67,433	40,333	9.07	59.82
1911	do	7,563	74,089	42,949	9.80	57.97
1912	do	6,688	65,406	37,940	9.78	58.01
1913	do	4,823	45,898	26,917	9.52	58.65
1914 [6]	do	739	6,916	4,085	9.35	59.07

VALUED AT MORE THAN $15 PER DOZEN.[1]

1898 [5]	50 per cent	235	$4,849	$2,424	$20.64	50.00
1899	do	176	7,729	3,864	43.91	50.00
1900	do	[7]	8,631	4,315		50.00
1901	do	[7]	5,271	2,635		50.00
1902	do	284	5,592	2,796	19.63	50.00
1903	do	711	13,116	6,558	18.44	50.00
1904	do	709	9,166	4,583	12.93	50.00
1905	do	681	7,074	3,537	10.38	50.00
1906	do	438	7,693	3,846	17.56	50.00
1907	do	317	5,698	2,849	17.93	50.00
1908	do	613	10,853	5,426	17.71	50.00
1909	do	351	6,485	3,242	18.43	50.00
1910	do	2,509	44,700	22,350	17.81	50.00
1911	do	368	6,983	3,491	18.97	50.00
1912	do	645	11,537	5,768	17.88	50.00
1913	do	384	7,040	3,520	18.29	50.00
1914 [6]	do	95	1,846	923	19.30	50.00

[1] Not limited to $15 prior to 1898.
[2] From Oct. 6, 1890, to June 30, 1891.
[3] From July 1 to Aug. 28, 1894.
[4] Not classified according to value under act of 1894. See Table 8 below.
[5] From July 24, 1897, to June 30, 1898.
[6] From July 1 to Oct. 13, 1913.
[7] Not stated.

TABLE 8.—*Cotton knit wearing apparel* [1]*—Imports for consumption—Revenue.*

ACT OF 1894.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Dozens.				*Per cent.*
1895 [2]	50 per cent	144,595	$479,987	$239,993	$3.32	50.00
1896	do	168,803	523,403	261,701	3.10	50.00
1897	do	161,751	503,761	251,880	3.11	50.00
1898 [3]	do	6,303	17,853	8,926	2.83	50.00

[1] Only one classification. [2] From Aug. 28, 1894, to June 30, 1895. [3] From July 1 to 24, 1897.

TABLE 8.—*Cotton knit wearing apparel*[1]*—Imports for consumption—Revenue*—Contd.

ACT OF 1913.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:		*Dozens.*				*Per cent.*
1914[1]	30 per cent	96,359	$304,270	$91,281	$3.14	30.00
1915	do	78,241	278,182	83,454	3.55	30.00
1916	do	52,194	181,947	54,584	3.48	30.00
1917	do	57,039	237,376	71,212	4.16	30.00
1918	do	37,226	216,248	64,874	5.80	30.00
1919	do	100,730	682,998	204,100	6.78	30.00
1920	do	24,329	187,642	56,221	7.71	30.00
Calendar year:						
1920	do	22,441	193,119	57,936	8.61	30.00
1921	do	28,615	162,480	48,703	5.68	30.00
1921	30 per cent plus 7 cents per pound.	[2] 2,911	27,049	8,780	9.29	32.46
1922 (Jan. 1 to Sept. 21).	30 per cent	548	1,493	448	2.72	30.00
1922 (Jan. 1 to Sept. 21).	30 per cent plus 7 cents per pound.	[3] 4,819	33,974	10,822	7.05	31.85

[1] From Oct. 3, 1913, to June 30, 1914.
[2] Under emergency tariff act of May 27, 1921. Quantity equivalent to 9,510 pounds.
[3] Equivalent to 8,997 pounds.

TABLE 9.—*Cotton knit wearing apparel—Underwear*[1]*—Domestic exports.*

Exported to—	Fiscal years.			Calendar years.			
	1918	1919	1920	1920	1921	Jan. 1 to Sept. 21, 1922.	
						Quantity.	Value.
						Dozens.	
United Kingdom	$125,932	$874,283	$2,332,585	$2,381,815	$850,786	389,938	$1,533,991
Australia	334,507	839,969	428,249	1,096,668	236,736	246,467	498,695
Cuba	443,425	453,700	1,095,838	1,601,448	139,871	58,124	218,094
Argentina	199,874	307,250	575,851	1,363,401	406,547	60,407	411,065
Canada	448,707	284,998	492,004	449,449	458,629	158,860	365,743
Uruguay	40,837	181,281	249,343	532,523	152,611	25,590	131,755
Chile	145,165	135,240	93,557	145,112	43,043	2,712	17,363
New Zealand	23,576	107,071	42,577	73,594	27,255	19,581	42,914
Mexico	133,798	102,044	97,560	138,277	96,913	11,449	51,606
France	35,037	99,121	30,657	29,244	222	.....	.....
British South Africa	51,049	54,332	177,311	256,804	73,709	40,763	116,838
Peru	43,953	43,066	122,331	197,939	29,450	4,120	20,669
Norway	22,359	255,921	1,602,445	936,394	18,182	10,678	60,741
Denmark	5,000	156,920	519,043	240,183	26,747	7,437	29,275
All other countries	576,433	2,150,886	4,180,775	4,624,843	1,041,792	222,664	884,459
Total	2,602,293	5,633,241	12,040,126	14,067,839	3,602,493	1,258,790	4,383,228

[1] Not separately stated prior to 1918.

TABLE 10.—*Cotton knit wearing apparel, other than hosiery or underwear*[1]*—Domestic exports.*

Exported to—	Fiscal years.			Calendar years.	
	1918	1919	1920	1920	1921
United Kingdom	$25,799	$66,508	$424,825	$520,605	$28,709
Australia	25,949	26,277	13,982	25,622	11,529
Cuba	88,792	79,224	223,215	375,451	48,640
Argentina	212,736	74,619	89,773	139,243	48,487
Canada	353,084	274,775	654,685	482,584	113,063
Uruguay	164,064	11,175	18,459	48,434	25,128
Chile	12,105	16,353	14,165	14,785	4,941
New Zealand	7,213	7,968	9,877	11,122	1,414
Mexico	62,491	25,474	92,240	154,189	58,589
France	57,527	98,149	20,284	14,199	5,845
British South Africa	18,779	14,345	24,778	34,106	1,873
Peru	6,156	4,670	26,696	34,726	8,290
Norway	3,379	55,325	184,544	113,060	.....
Denmark	7,582	13,713	124,876	44,522	1,974
All other countries	137,967	282,640	418,905	497,910	69,291
Total	1,172,662	1,037,502	2,341,304	2,510,558	427,737

[1] Not separately stated prior to 1918.

TABLE 11.—*Cotton knit underwear—Prices (wholesale).*

[From War Industries Board, Price Bulletin No. 23.]

Year.	Women's ribbed union suits 12 pounds per dozen.	Men's shirts and drawers, flat fleeced, 12½–13 pounds.	Merino shirts and drawers, 50 per cent wool, 24 gauge.	Men's balbriggans, 5½ pounds per dozen.
1913	$8.2500	$4.2500	$13.5000	$3.2500
1914	8.2500	4.2500	13.5000	3.2500
1915	8.2500	4.1875	13.5000	3.2500
1916	9.0313	4.6094	13.5475	3.4688
1917	12.2917	6.6771	17.6667	4.8646
1918	18.0208	13.0290	21.5597	7.0625

TABLE 12—*Cotton knit wearing apparel (except hosiery and gloves)—Rates of duty.*

Act of—	Par.	Tariff classification or description.	Rate of duty.
1883....	322	* * * shirts, and drawers, and all goods made on knitting machines or frames, composed wholly of cotton, and not herein otherwise provided for.	35 per cent ad valorem.
	323	* * * shirts, and drawers, fashioned, narrowed, or shaped wholly or in part by knitting machines or frames, or knit by hand, and composed wholly of cotton.	40 per cent ad valorem.
1890....	352	* * * shirts and drawers composed of cotton, valued at not more than $1.50 per dozen.	35 per cent ad valorem.
	353	* * * all shirts and drawers composed of cotton or other vegetable fiber, valued at—	
		More than $1.50 per dozen and not more than $3 per dozen...	$1 per dozen plus 35 per cent.
		More than $3 per dozen and not more than $5 per dozen.....	$1.25 per dozen plus 40 per cent.
		More than $5 per dozen and not more than $7 per dozen.....	$1.50 per dozen plus 40 per cent.
		More than $7 per dozen.....	$2 per dozen plus 40 per cent.
1894....	262	* * * knitted shirts or drawers, * * * composed of cotton or other vegetable fiber, finished or unfinished.	50 per cent.
1897....	319	Shirts and drawers, pants, vests, union suits, combination suits, tights, sweaters, corset covers and all underwear of every description made wholly or in part on knitting machines or frames, or knit by hand, finished or unfinished, not including stockings, hose and half hose composed of cotton or other vegetable fiber, valued at—	
		Not more than $1.50 per dozen.....	60 cents per dozen plus 15 per cent.
		More than $1.50 per dozen and not more than $3 per dozen...	$1.10 per dozen plus 15 per cent.
		More than $3 per dozen and not more than $5 per dozen.....	$1.50 per dozen plus 25 per cent.
		More than $5 per dozen and not more than $7 per dozen.....	$1.75 per dozen plus 35 per cent.
		More than $7 per dozen and not more than $15 per dozen....	$2.25 per dozen plus 35 per cent.
		Above $15 per dozen.....	50 per cent.
1909....	329	Shirts and drawers, pants, vests, union suits, combination suits, tights, sweaters, corset covers and all underwear of every description made wholly or in part on knitting machines, or frames, or knit by hand, finished or unfinished, not including stockings, hose and half hose, composed of cotton or other vegetable fiber, valued at—	
		Not more than $1.50 per dozen.....	60 cents per dozen plus 15 per cent.
		More than $1.50 per dozen and not more than $3 per dozen...	$1.10 per dozen plus 15 per cent.
		More than $3 per dozen and not more than $5 per dozen.....	$1.50 per dozen plus 25 per cent.
		More than $5 per dozen and not more than $7 per dozen.....	$1.75 per dozen plus 35 per cent.
		More than $7 per dozen and not more than $15 per dozen....	$2.25 per dozen plus 35 per cent.
		Above $15 per dozen.....	50 per centum ad valorem.

TABLE 12.—*Cotton knit wearing apparel (except hosiery and gloves—Rates of duty—* Continued.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1913....	261	Shirts and drawers, pants, vests, union suits, combination suits, tights, sweaters, corset covers, and all underwear and wearing apparel of every description, not specially provided for in this section, made wholly or in part on knitting machines or frames, or knit by hand, finished or unfinished, not including such as are trimmed with lace, imitation lace or crochet or as are embroidered and not including stockings, hose and half hose, composed of cotton or other vegetable fiber.	30 per centum ad valorem
1921....	16	Cotton having a staple of 1⅛ inches or more in length.....	7 cents per pound.
	17	Manufactures of which cotton of the kind provided for in paragraph 16 is the component material of chief value.	7 cents per pound, in addition to the rates of duty imposed thereon by existing law.
1922....	917	Underwear and all other wearing apparel of every description, finished or unfinished, composed of cotton or other vegetable fiber, made wholly or in part on knitting machines, or knit by hand, and not specially provided for.	45 per centum ad valorem.

COURT AND TREASURY DECISIONS.

The provision in paragraph 339 of the act of 1897 for wearing apparel in part of lace was held to be more specific in reference to cotton neckwear composed in part of lace than the provision in paragraph 314 for neckties or neckwear composed of cotton. (Goldenberg *v.* United States, 130 Fed. 108, of 1904; petition for certiorari denied, 195 U. S. 634.)

Cotton knit shawls, returned by the appraiser as "imitation cotton lace wearing apparel," were declared not to be made wholly or in part of imitation lace within paragraph 339 of the act of 1897 but were held to be dutiable under paragraph 314 which provided for wearing apparel composed of cotton or other vegetable fiber or of which cotton or other vegetable fiber was the component material of chief value, made up or manufactured wholly or in part by the tailor, seamstress, or manufacturer. (G. A. 6040, T. D. 26369, of 1905.) In Abstract 34284 T. D. 34000, of 1913, cotton lace shawls were held to be dutiable as cotton lace wearing apparel under paragraph 349 of the act of 1909 rather than as wearing apparel of cotton under paragraph 324. Knit scarfs, composed of cotton and lace, cotton chief value, made on knitting machines or frames were, however, held dutiable as cotton knit wearing apparel under paragraph 261 of the act of 1913 rather than under the provision in paragraph 358 for "wearing apparel, and all other articles or fabrics made wholly or in part of lace or of imitation lace of any kind." (G. A. 7775, T. D. 35715, of 1915. But in a later case brought by the same importers, upon proof of commercial designation, merchandise identical with that passed upon in T. D. 35715, *supra*, was held to be properly dutiable under the provision in paragraph 358 of the act of 1913 for "wearing apparel, and all other articles or fabrics made wholly or in part of lace or of imitation lace of any kind." (G. A. 7947, T. D. 36596 modifying G. A. 7775, T. D. 35715, *supra*.)

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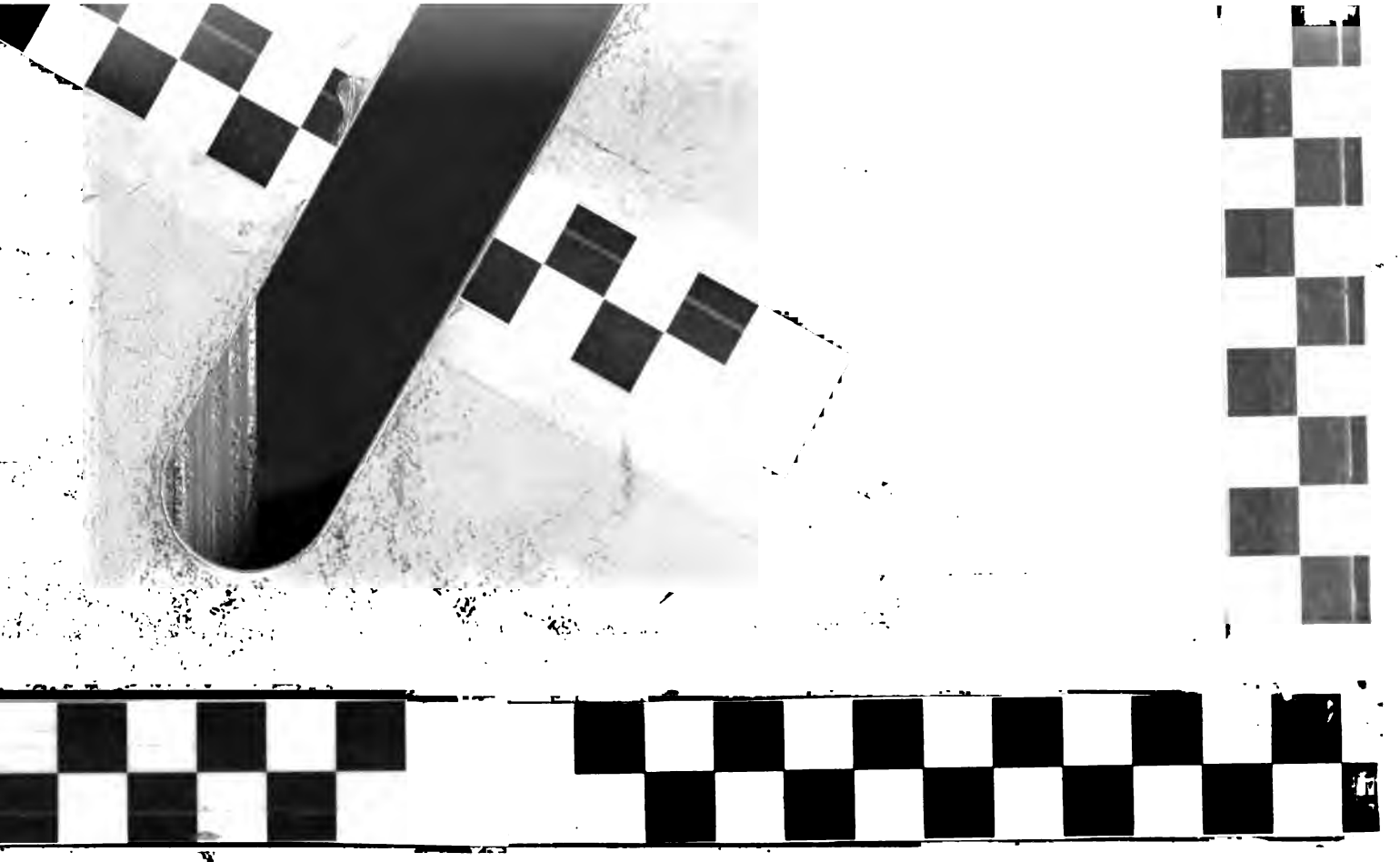

UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPHS 255 and 256 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

COTTON WEARING APPAREL

Paragraph 255:
Plain Handkerchiefs

Paragraph 256:
Ready-made Clothing
Shirt Collars and Cuffs
Corsets, not ornamented

REVISED EDITION

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article was provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and index" the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission has had the services of Evelina P. Kean, of the textile division of the commission's staff, and of others.

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COTTON WEARING APPAREL.

TARIFF ACT OF OCTOBER 3, 1913.

[Text of Schedule I, providing for cotton wearing apparel, except knit goods, not ornamented with lace or embroidery.]

Par. 255. Handkerchiefs or mufflers composed of cotton, not specially provided for in this section, whether finished or unfinished, not hemmed, 25 per centum ad valorem; hemmed, or hemstitched, 30 per centum ad valorem.

Par. 256. Clothing, ready-made, and articles of wearing apparel of every description, composed of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value, or of cotton or other vegetable fiber and india rubber, made up or manufactured, wholly or in part, by the tailor, seamstress, or manufacturer, and not otherwise specially provided for in this section, 30 per centum ad valorem; shirt collars and cuffs of cotton, not specially provided for in this section, 30 per centum ad valorem.

PLAIN COTTON HANDKERCHIEFS.

SUMMARY.

Plain cotton handkerchiefs constitute probably three-fourths of the total quantity of handkerchiefs produced in the United States. Although it is not entirely a specialized industry, the bulk of the output is by large, well-organized establishments making only handkerchiefs. These are located mainly in New York City, New Jersey, and Pennsylvania.

The value of the domestic production of plain cotton handkerchiefs in 1914 was estimated at about $10,000,000. The valu e of the production in 1920 was probably three times this amount, the increase being due mainly to the higher level of prices, but partly to the larger production and consumption of plain cotton handkerchiefs resulting from the scarcity and relatively higher prices of linen handkerchiefs.

Imports of plain cotton handkerchiefs were very small prior to the fiscal year 1914, when they increased to $112,499. Imports in the calendar year 1920 were abnormally large, being valued at $1,633,769. This record import was due to trade conditions in the aftermath of the war period, but did not amount to as much as 5 per cent of the domestic production.

GENERAL INFORMATION.

Handkerchiefs were provided for in the act of 1913 as follows:

		Per cent ad valorem.
Par. 255. Cotton:		
	Plain, unhemmed	25
	Plain, hemmed or hemstitched	30
Par. 282. Flax, hemp, or ramie:		
	Plain, unhemmed or hemmed	35
	Plain, hemstitched, imitation hemstitched, revered, or with drawn threads	40

	Per cent ad valorem.
Par. 315. Silk:	
Plain, unhemmed or hemmed	60
Plain, hemstitched, imitation hemstitched, revered, or having drawn threads	50
Par. 358. Of any material:	
Embroidered, tambooned, appliqued, scalloped, or made wholly or in part of lace or imitation lace	60

Relative imports under these four paragraphs of the 1913 act varied from year to year, but as a rule the largest proportion of the handkerchiefs imported entered under paragraph 358, followed by 282 and then 315, with 255 ranking as the least important so far as regarded importations. This is clearly shown by the following table:

Handkerchiefs—Imports for consumption.

	Plain.			Ornamented with lace or embroidery.			Total.
	Cotton.	Linen.	Silk.	Cotton.	Linen.	Silk.	
Fiscal year:							
1911	$46,128	$294,627	$25,222	$468,422	$2,285,325	$343,579	$3,463,195
1912	47,647	306,651	14,987	335,356	2,732,445	328,254	3,665,354
1913	36,964	304,122	14,572	368,991	1,901,263	223,735	2,934,948
1914	112,489	691,895	243,742	395,222	1,929,924	127,223	3,500,495
1915	126,182	744,123	286,391	1,196,767	1,796,325	17,989	4,167,777
1916	[1] 134,281	779,281	486,192	226,428	1,545,389	13,753	3,175,323
1917	314,940	1,125,200	1,115,195	491,925	1,998,457	26,660	5,072,377
1918	542,780	1,206,183	1,122,449	704,494	1,921,748	41,415	5,489,027
1919	455,699	856,688	1,228,949	726,679	1,248,734	28,681	4,675,432
1920	1,606,730	1,771,944	1,866,861	1,992,441	1,926,422	77,965	9,292,364
Annual average	299,973	853,992	656,992	697,954	1,926,967	128,667	4,606,322
Calendar year:							
1920	1,622,709	1,930,101	1,692,994	1,927,772	1,209,595	69,051	8,384,213
1921	1,262,827	1,822,124	1,909,999	1,456,744	1,128,699	42,115	6,764,236

[1] Includes $2,248, for manufacture in bonded warehouse and export.

DESCRIPTION.

Paragraph 255 of the act of 1913 covered the staple article that constitutes the bulk of the handkerchief trade, the plain hemmed or hemstitched cotton handkerchief which is made in the United States in large quantities. To prevent the evasion of duty on goods but one step removed from the finished article, there was special provision in this paragraph for unhemmed handkerchiefs, this covering cloth cut to handkerchief size or goods in the piece which are obviously intended by reason of printing, marks in the weaving, or otherwise, for making into handkerchiefs.

All grades of light-weight cotton cloth, from ordinary print cloth up to the finest combed lawn, are used for making handkerchiefs. These are of varied styles and sizes; women's handkerchiefs are made up to 15 inches square whereas men's handkerchiefs are mainly 18 to 23 inches square. Mufflers, also mentioned in paragraph 255, are large kerchiefs, used ordinarily to protect the throat or head. They present no distinct problem apart from handkerchiefs and in the volume of trade are of slight importance.

DOMESTIC PRODUCTION.

Materials.—Cotton cloth used in the production of handkerchiefs includes print cloths, made of 28s to 42s yarns, longcloths made of 40s to 60s yarns, and combed lawn made of 60s to 110s, or finer, yarns. In the first two classes the material is almost invariably domestic, as satisfactory cloths of this type can be obtained here at prices that are usually lower than those at which similar goods can be landed from abroad. The combed lawns used are partly domestic and partly imported; part of the import is due to lower prices and part to superior quality or the fact that cloths of the desired fineness can not be obtained in this country.

The following particulars, of typical cotton cloths, in the gray, largely used in making handkerchiefs, are supplied by leading manufacturers:

Width in inches.	Yards per pound.	Ends and picks per square inch.	Total threads per square inch.	Official average yarn count.
Carded:				
39	4.25	72 by 76	148	29.2
38½	5.35	64 by 60	124	30.4
38½	6.00	60 by 52	112	30.8
38½	6.25	60 by 48	108	30.9
39	4.75	68 by 72	140	30.9
39	5.00	80 by 88	168	39.0
40	6.00	72 by 68	140	40.0
40	6.00	80 by 76	156	44.6
39	5.00	96 by 100	196	45.5
40	6.00	88 by 80	168	48.0
44	6.25	80 by 80	160	52.4
36	9.80	68 by 64	132	55.4
38	7.00	88 by 88	176	55.7
36	10.00	72 by 60	132	56.6
40	9.65	72 by 60	132	60.7
Combed:				
36	10.00	76 by 72	148	63.4
36	9.00	88 by 80	168	64.8
40	7.00	96 by 100	196	65.3
40	7.50	96 by 92	188	67.1
40	9.65	76 by 72	148	68.0
40	8.50	88 by 80	168	68.0
39	8.75	88 by 80	168	68.2
36	10.00	80 by 80	160	68.6
40	7.00	104 by 104	208	69.1
40	9.65	80 by 80	160	73.5
40	8.00	96 by 100	196	74.7
40	9.35	96 by 92	188	83.7
40	9.00	104 by 100	204	87.4

Methods of production.—The handkerchief manufacturers buy their cloth, which is therefore the "raw material" of the handkerchief industry. After being bleached, and in some cases dyed or printed, the cloth is cut and the edges are hemmed or hemstitched on machines. The handkerchiefs are then ironed, folded, boxed, and cased. Handkerchiefs may be woven as such on the loom but this method is not in general use in the United States.

The following description of handkerchief manufacture is given by a representative of the industry:[1]

The manufacture of cotton handkerchiefs presents no special difficulties and those with either color or silk borders are easily made, providing due attention is paid to a few features and the calculations therefor are taken into consideration. The actual loom production may be lowered slightly and in some cases a larger number of harnesses may be required than for ordinary plain goods.

[1] Kaskel, J. S.: Southern Textile Bulletin, July 27, 1922.

The construction for most of the cloths used for this class of merchandise is a plain lawn. The cloth is usually within a range of from 7 to 8½ yards per pound; the warp is usually about 60 singles; the filling between 90 and 105 singles. Naturally there are variations from these figures, but on the whole that is a reasonable range and the most popular one.

Handkerchief cloth is woven in different widths with due regard being paid to such breadth which will permit of its being cut up by the handkerchief manufacturer as will be the most economical for his work. * * * Some of the best widths in which these goods are made are 36, 39, 40, and 46 inches. The advantages of these will be readily grasped by making the handkerchiefs a size to correspond which will produce the least waste. Thus a 36-inch cloth will give three handkerchiefs each one measuring 12 inches wide and 11.75 inches long. The 39-inch width will permit the cutting of two of the dimension of 19.5 inches wide and 19 inches long. The 40-inch width will give two which are each 20 inches wide and 19.5 inches long. The 46-inch width is good for four handkerchiefs each of which are 11.5 inches wide and 11.25 long.

Handkerchiefs are almost always square and it probably has been already noted by the reader that there is a slight difference between the length and width of each handkerchief in the above calculation. This is done purposely as the cloth in finishing will extend in the length and contract in the width as many cotton fabrics. do. This extension and contraction balances and will make the handkerchief square, but the advantages remain with the manufacturer as he will be enabled to obtain a few more pieces out of the cut.

In weaving cloth for this purpose we always provide a mark for the cutter both in the width and in the length. This is done to facilitate his work. To mark it in the direction of the warp we often leave two or three dents empty. This is the particular system followed on gray goods, but in color work that would not be sufficiently clear and distinct, so there we draw in one gray cord which is visible. When a gray cord is used we have found that a 2/20s is large enough and this should be given one full dent.

To make a shearing or cutting mark in the direction of the filling we shoot in several picks in one shed. This raised cord effect is a very good and easily apparent line to guide the cutting. In this respect it is most essential that great care and attention be given to the distance between the cutting marks otherwise losses will be created, because the sizes must be exact.

Handkerchiefs in the course of their manufacture are folded so that the corners are turned in and it is absolutely imperative that these four corners meet in the center. If they do not, the handkerchief is cut into shape that they will. If the weaving of the cloth and the placing of the shearing marks therein are not done carefully there will be a waste. This must be avoided.

The hemming or hemstitching of handkerchiefs is work well adapted to female labor; the material handled is light and the operation involves the use of only the ordinary sewing machine, or similar machines with hemstitching attachments, either of which can be run by power. By far the larger part of the wage earners are women, the latest inclusive records showing that on December 15, 1914, there were employed in the handkerchief industry 7,272 women as against 1,064 men, or roughly in the proportion of 7 to 1.

Organization.—Few manufacturers confine themselves to handkerchiefs of any one type or material. The majority use both cotton and linen cloths, and produce both men's and women's handkerchiefs, plain and ornamented. Moreover, the manufacture of handkerchiefs is not entirely a specialized industry, sometimes being reported as a subsidiary of wearing apparel manufacture.

The bulk of the output is made under large-scale factory conditions, although a not inconsiderable proportion is made in small shops and by individuals working on contract. The handkerchief industry has not been separately reported by the Census Bureau, but a study of the original schedules for 1914 showed that approximately 80 per cent of the total domestic product, including ornamented handkerchiefs, was put on the market by 49 manufacturers who had the handkerchiefs made up and finished in their own plants. The remaining 20

per cent was produced by about 75 small concerns, which worked by contract on materials supplied them by others; their output was largely of handkerchiefs embroidered or otherwise ornamented. Over half of the total handkerchiefs was produced by six firms having a combined output of more than $7,500,000 annually. Four of these produced more than a million dollars' worth each, and two produced over a half million dollars' worth each. A total of 27 other manufacturers reported individual outputs ranging between $50,000 and $500,000 annually.

A considerable number of establishments making handkerchiefs have small working forces, but the larger factories employ several hundred each. The largest plant devoted entirely to handkerchiefs employed during 1914 an average of nearly 1,400 workers.

Geographical distribution.—The handkerchief industry is largely localized in the northeastern States, with New York as the main distributing center. Of the 25 largest plants, 11 are in New Jersey, and 8 of these in Passaic. A number of important establishments are located in Pennsylvania, several in Rhode Island, and a considerable number in and around New York City.

Domestic production.—Cotton and linen handkerchiefs, plain and embroidered, are usually made in the same establishment; this renders it difficult to treat the manufacture of cotton handkerchiefs separately. The value of the plain cotton handkerchiefs produced in 1914 was estimated at about $10,000,000, or about two-thirds of the total for all handkerchiefs.[2] Considering the lower average value of the cotton article, it is probable that plain cotton handkerchiefs constitute at least three-fourths of the number of handkerchiefs produced annually in the United States.

Domestic exports.—Handkerchiefs were not separately stated in export statistics of the United States prior to January, 1922. In the first six months of 1922, exports of cotton handkerchiefs amounted to 144,797 dozen, valued at $98,739. Export trade in handkerchiefs, as in most other manufactures of cotton, has increased during the last few years. An indication is afforded by Canadian statistics, which record importations of American cotton handkerchiefs valued at $175,460 in 1920, as against only $6,111 in 1914, fiscal years ending March 21.

FOREIGN PRODUCTION.

There are no statistics as to the volume of foreign production of cotton handkerchiefs. As the manufacture of handkerchiefs is largely a cutting-up trade, requiring little skill, undoubtedly most countries supply the great bulk of their domestic needs of this staple article of convenience out of the piece goods that they weave or import. In the greater number of instances, cotton handkerchiefs are not separately recorded in import and export statistics.

Such partial data as are available indicate that the United Kingdom is the main exporter, supplying all grades, from the gaudy bandanna to handkerchiefs of the finest quality. The cotton cloth is, as a rule, woven in Great Britain but Belfast is the main export center, being

[2] Derived from a study of the original schedules prepared by manufacturers for the 1914 census and verified by statements at the tariff hearings. As the year 1914 was a period of depression and reduced operations in the handkerchief trade, the normal output was probably larger than indicated; in recent years higher prices alone would greatly increase the total value.

favored because of the excellence of its bleaching, the cheapness of home labor available for initialing or otherwise ornamenting the article, and the fact that it is also the main export center for linen handkerchiefs and therefore accustomed to putting up handkerchiefs in any style required. The cotton manufacturing countries of the Continent, such as Germany, Austria, Switzerland, France, and Italy, export in smaller quantities, as also do Japan, and recently, the United States. The Swiss handkerchiefs exported are mainly embroidered; French handkerchiefs are mainly of fine quality and largely of those ornamented with lace.

IMPORTS.

Prior to the act of 1897 imports of cotton handkerchiefs were not separately recorded, being included in records of importations of handkerchiefs made of cotton "or other vegetable fiber." In the 23 fiscal years 1898 to 1920, inclusive, imports of plain cotton handkerchiefs averaged $175,748 annually.

In the period covered by the acts of 1897 and 1909, with no change in the wording descriptive of handkerchiefs brought in, the equivalent ad valorem rate of duty averaged 52.46 per cent on actual imports. Imports ranged from a high of $147,437 in 1899 to a low of $39,964 in 1913. Under the act of 1913, in the period from October 4, 1913, to June 30, 1920, inclusive, the ad valorem rate of duty averaged 29.10 per cent. Imports under the act of 1913 were more substantial, ranging from a low of $120,153 in the fiscal year 1915 to a high of $1,633,769 in the calendar year 1920. If the value of the domestic production of plain cotton handkerchiefs was $[illegible] in 1914 it must have been two or three times as much in 1920, and the record import in 1920 was therefore less than 5 per cent of the domestic production.

The finished handkerchief, hemmed or hemstitched, has always made up the bulk of the import trade in plain cotton handkerchiefs. Importations of handkerchiefs in the piece, or handkerchiefs cut but not hemmed, constituted in the highest year less than one-ninth of the total imports under paragraph 255 of the act of 1913, and prior to 1916 were practically negligible.

Imports of plain cotton handkerchiefs, dutiable under paragraph 255, were usually much less important than imports of fancy cotton handkerchiefs, adorned with embroidery, lace, or otherwise, dutiable under paragraph 358 of the act of 1913 at 60 per cent ad valorem. Imports in the fiscal year 1920 were exceptional in that plain cotton handkerchiefs were slightly in excess of fancy cotton handkerchiefs.

The increase in imports of plain cotton handkerchiefs to more than a million dollars in 1920 was due to various causes. During the calendar year 1919 prices of cotton manufactures in the United States increased greatly, whereas European prices rose more slowly; the divergence became so great in the fall of 1919 that, aided by the drop in the exchange value of the pound sterling which increased the purchasing power of the American dollar, importing became unusually profitable. This greatly stimulated the purchase abroad of cotton cloth and of articles made therefrom. The fact that British prices were also rising quickened buying, not only because of a desire to take advantage of prevailing prices but because of the saving in customs dues under an ad valorem duty by importing before prices could

rise further. This flood of buying orders lasted until March, 1920, by which time British prices had risen to more nearly their normal relation to the American. Another factor that stimulated imports of plain cotton handkerchiefs was the scarcity of plain linen handkerchiefs, arising mainly from the scarcity and high price of fine linen from which to make such handkerchiefs.

Imports of plain cotton handkerchiefs are almost entirely from the United Kingdom and Switzerland, although there are small and more or less sporadic imports from a few other countries.

TARIFF HISTORY.

Under the act of 1890 cotton handkerchiefs unhemmed or hemmed were dutiable at 50 per cent ad valorem, if hemstitched, at 60 per cent ad valorem; under the act of 1894 these rates were reduced to 40 per cent ad valorem.

Under the act of 1897 cotton handkerchiefs unhemmed or hemmed were dutiable at the same rate as the cloth of which composed, but with a proviso for a minimum rate of 45 per cent ad valorem; if hemstitched or imitation hemstitched or revered they were dutiable at a differential of 10 per cent ad valorem above the cloth duty, but with a proviso for a minimum rate of 55 per cent ad valorem. The 1897 provisions were reenacted without verbal change in 1909. There was, however, some inherent difference inasmuch as the cloth schedule, which formed the basis in each case, was slightly modified. Theoretically, the number of classifications was increased, but actually it was fewer, as the cotton handkerchiefs were imported in the main under the minimum clause.

Under the act of 1913 cotton handkerchiefs unhemmed were dutiable at 25 per cent ad valorem; if hemmed or hemstitched, 30 per cent ad valorem.

The emergency tariff act of May 27, 1921, provided a compensatory duty of 7 cents per pound on all manufactures of cotton having a staple of $1\frac{3}{8}$ inches or over. This provision applied to a large proportion of the cotton handkerchiefs imported.

In the act of 1922, paragraph 918, unhemmed cotton handkerchiefs are dutiable as the cloth of which made, whereas those hemmed or hemstitched pay 10 per cent ad valorem in addition thereto. A minimum ad valorem rate of 30 per cent is provided for those containing yarns the average number of which does not exceed 40, and a minimum rate of 40 per cent on those made of finer yarns.

COMPETITIVE CONDITIONS.

Under the acts of 1897 and 1909 imports of plain cotton handkerchiefs were so small as to show that the minimum rates of 45 per cent on unhemmed or hemmed handkerchiefs and of 55 per cent on hemstitched handkerchiefs were practically prohibitive. Considerably over nine-tenths of the imports under those acts were entered under the minimum rate provisions, indicating that the small imports were of finer and higher-priced grades than those made in this country.

Imports under the act of 1913, with rates of 25 and 30 per cent, increased, but with the exception of the abnormal purchases during

the fiscal year 1920, when the demand for all kinds of goods appeared insatiable, were less than a half million dollars a year, and even the record imports of 1920, amounting to something over a million dollars, constituted less than 5 per cent of the domestic production.

Medium grade cloths, such as staple print cloths, are made in the United States in enormous quantities and, aided by the automatic loom, which is as yet little used abroad, at prices that do not permit of foreign competition either on the cloth or on articles, such as handkerchiefs, which are but a stage removed therefrom. The competitive status of foreign cotton cloths and of handkerchiefs made therefrom improves with any increase in the fineness, in other words, with any increase in the ratio of labor cost to the total cost.

TARIFF CONSIDERATIONS.

Cotton cloth when bleached, as most handkerchief cloth is, was dutiable under paragraph 252 of the act of 1913 at 10 to 30 per cent ad valorem, according to the fineness of the yarn from which woven. A flat duty on the advanced article—25 per cent if not hemmed and 30 per cent if hemmed or hemstitched—bore unevenly, therefore, upon handkerchiefs made of different grades of cloth, imposing a much higher duty on the lower grade handkerchiefs, as compared with the cloth of which composed, than on the finer grades, which paid a slightly higher duty, or the same rate as the component cloth. Thus, handkerchiefs made of yarns under 40s paid the duty of 25 or 30 per cent, while the cloth of which they were composed was subject to only 15 per cent; handkerchiefs made of yarns finer than 80s, at the other extreme, were subject to practically the same rate of duty as the cloth of the same fineness (27½ to 30 per cent). Hence it was possible for cotton cloth made of fine yarns over 80s to be cut into handkerchiefs, but not hemmed, and imported under this paragraph at a lower rate of duty than if imported as cloth in the piece.

As the rates on cotton handkerchiefs were ad valorem, they automatically provided for increased duty on each additional process of manufacture which advanced the value of the commodity. This, of course, was nullified in the case of unhemmed handkerchiefs made of cloth dutiable at more than 25 per cent, but on the other hand, amounted to a double differential on lower grades of cotton handkerchiefs.

STATISTICAL TABLES.

Cotton handkerchiefs or mufflers [1]—Imports by countries, 1912–1922.

[Fiscal years.]

Imported from—	1912	1913	1914	1915	1916	1917
Switzerland	$206,290	$315,584	$219,911	$100,587	$108,877	$267,095
United Kingdom	103,941	96,680	163,576	174,105	220,297	515,324
France	11,998	8,714	10,060	4,218	2,500	6,884
Azores and Madeira Islands	963	4,363	8,268	5,039	4,609	8,790
Turkey in Asia	31,413	19,297	6,350	28	.....	.....
Germany	4,341	5,837	4,111	5,077	.....	.....
Japan	5,459	1,891	3,328	4,217	7,394	15,307
British India	1,062	27	829	811	2,916	11,848
All other countries	8,934	6,147	9,206	4,031	1,434	7,103
Total	374,401	458,540	425,639	298,113	348,027	832,351

Imported from—	1918	1919		1920	
	Value.	*Dozen.*	*Value.*	*Dozen.*	*Value.*
Switzerland	$361,325	364,600	$343,829	558,969	$652,713
United Kingdom	825,055	1,065,911	788,989	1,965,126	1,490,378
France	72,025	16,924	19,744	13,038	19,990
Azores and Madeira Islands	5,276	2,722	5,329	5,559	4,124
Turkey in Asia	.....	.....	.....	3,531	7,115
Germany	.....	.....	.....	.....	.....
Japan	24,167	458	400	13,968	9,927
British India	6,126	8,309	4,284	13,860	9,868
All other countries	12,668	924	706	3,224	5,249
Total	1,306,642	1,459,848	1,163,281	2,577,275	2,199,364

[1] Not separately stated prior to 1912; includes handkerchiefs of lace and embroidery.

[Calendar years.]

Imported from—	1920		1921		First quarter 1922.	
	Dozen.	*Value.*	*Dozen.*	*Value.*	*Dozen.*	*Value.*
Switzerland	1,122,641	$1,356,603	809,408	$810,358	219,487	$180,790
United Kingdom	2,804,618	2,186,118	2,142,510	1,702,713	385,944	259,431
France	28,339	45,155	125,545	66,803	3,838	8,189
Azores and Madeira Islands	4,467	7,845	24,136	36,344	1,884	2,617
Turkey in Asia	6,838	12,771	278	984	.....	.....
Germany	834	1,423	15,021	12,640	2,705	1,330
Japan	13,380	13,194	5,018	2,872	4	9
British India	21,457	18,351	23,730	16,266	7,782	4,195
All other countries	19,850	26,319	21,486	26,070	8,944	7,697
Total	4,022,424	3,667,779	3,167,132	2,675,050	630,588	464,258

Cotton handkerchiefs or mufflers, not ornamented with embroidery or lace—Imports for consumption—Revenue, 1898–1921.

	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
Fiscal year:				*Per cent.*
1898 [1]	Compound	$143,079	$81,092	56.68
1899	....do	147,437	80,420	54.54
1900	....do	140,692	74,886	53.23
1901	....do	77,650	40,746	52.47
1902	....do	83,205	41,894	50.35
1903	....do	95,471	46,369	48.57
1904	....do	94,308	47,036	49.87
1905	....do	62,108	31,962	51.30
1906	....do	48,273	24,953	51.69
1907	....do	58,124	29,493	50.74

[1] Prior to July 25, 1897, imports of cotton handkerchiefs were not recorded separately, being included in imports of handkerchiefs "of cotton or other vegetable fiber."

Cotton handkerchiefs or mufflers, not ornamented with embroidery or lace—Imports for consumption—Revenue, 1898–1921—Continued.

	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
Fiscal year:				*Per cent.*
1908	Compound	$71,555	$35,415	49.49
1909	do	50,434	25,534	50.63
1910	do	69,140	36,702	53.08
1911	do	46,126	24,721	53.59
1912	do	47,647	25,741	54.02
1913	do	39,964	21,676	54.24
1914	do	19,899	10,817	54.35
1914	25 and 30 per cent	92,600	27,401	29.59
1915	do	120,153	35,197	29.29
1916	do	[2] 134,281	37,435	27.88
1917	do	314,840	89,232	28.34
1918	do	547,780	155,344	28.36
1919	do	453,689	134,471	29.64
1920	do	1,083,750	320,378	29.56
Annual average		175,748	64,301	36.59

	Rates of duty.	Dozen.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Calendar year:						*Per cent.*
1920	25 and 30 per cent	2,158,422	$1,633,769	$482,526	$0.80	29.53
1921	do	1,085,388	756,598	223,584	.71	29.55
1921 [3]	25 and 30 per cent plus 7 cents per pound.	694,831	496,239	156,920	.71	31.62

[2] Includes $2,348 admitted free of duty for manufacture in bonded warehouse and export.
[3] Under emergency tariff act of May 27, 1921. Quantity equivalent to 132,930 pounds.

Cotton handkerchiefs and mufflers, hemmed or hemstitched—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1883	325	Cotton * * * hemmed handkerchiefs, * * *	40 per cent ad valorem.
1890	349	* * * handkerchiefs, * * * composed of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value, made up or manufactured wholly or in part by the tailor, seamstress, or manufacturer, * * * not specially provided for in this act.	50 per cent ad valorem.
	373	* * * hem-stitched handkerchiefs composed of flax, jute, cotton or other vegetable fiber, or of which these substances or either of them, or a mixture of any of them is the component material of chief value, not specially provided for in this act.	60 per cent ad valorem.
1894	258	* * * handkerchiefs, * * * composed of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value, made up or manufactured wholly or in part by the tailor, seamstress, or manufacturer, * * * not specially provided for in this Act.	40 per cent ad valorem.
1897	312	Handkerchiefs or mufflers [1] composed of cotton, whether in the piece or otherwise and whether finished or unfinished, if not hemmed, or hemmed only, shall pay the same rate of duty on the cloth contained therein as is imposed on cotton cloth of the same description, weight, and count of threads to the square inch; but such handkerchiefs or mufflers shall not pay a less rate of duty than	45 per cent ad valorem
		If such handkerchiefs or mufflers are hemstiched, or imitation hemstitched, or revered, or have drawn threads, they shall pay a duty of ten per centum ad valorem in addition to the duty hereinbefore prescribed, and in no case less than	55 per cent ad valorem.

[1] As cloth, see pars. 304–310, inclusive.

Cotton handkerchiefs and mufflers, hemmed or hemstitched—Rates of duty—Continued.

Act of—	Par.	Tariff classification and description.	Rate of duty.
1909....	322	Handkerchiefs or mufflers[2] composed of cotton, whether in the piece or otherwise and whether finished or unfinished, if not hemmed, or hemmed only, shall pay the same rate of duty on the cloth contained therein as is imposed on cotton cloth of the same description, weight, and count of threads to the square inch: but such handkerchiefs or mufflers shall not pay a less rate of duty than	45 per cent ad valorem.
		If such handkerchiefs or mufflers are hemstitched, or imitation hemstitched, or revered, or have drawn threads, they shall pay a duty of ten per centum ad valorem in addition to the duty hereinbefore prescribed, and in no case less than	55 per cent ad valorem.
1913....	255	Handkerchiefs or mufflers composed of cotton, not specially provided for, in this section, whether finished or unfinished, not hemmed.	25 per cent ad valorem.
		hemmed, or hemstitched.[3]	30 per cent ad valorem.
1922....	918	Handkerchiefs and mufflers,[2] composed wholly or in chief value of cotton, finished or unfinished, not hemmed, shall pay duty as cloth; hemmed or hemstitched, shall pay, in addition thereto, 10 per centum ad valorem: *Provided*, That none of the foregoing, when containing yarns the average number of which does not exceed number 40, shall pay less than 30 per centum ad valorem; nor when exceeding number 40, less than 40 per centum ad valorem.	

[2] As cloth, see pars. 315–320, inclusive.
[3] As cloth, see pars. 903 and 906.

Court and Treasury Decisions.

Handkerchiefs cut apart but not hemmed were classified as manufactures of cotton and not as handkerchiefs hemmed nor as cotton cloth nor cotton strips for frilling, under the act of 1883. Their not being hemmed was declared not to affect the fact that they were handkerchiefs. (T. D. 8606, of 1888.)

In a case under the act of 1890, unbleached textile fabric of Egyptian cotton in imitation of pongee silk, having handkerchief designs printed thereon and dotted lines between the designs to be followed in separating the handkerchiefs, and commercially known as cotton handkerchiefs in the piece, was held dutiable under paragraph 349 as handkerchiefs made up wholly or in part, and not as cotton cloth not bleached. The mere separation of the handkerchiefs was adjudged not a material process in the manufacture of the handkerchiefs. Squares of printed calico of plain cotton cloth, the size of handkerchiefs, cut from a piece, the Board of General Appraisers said, would not be removed from classification as countable cotton cloth. Cotton cloth itself must have undergone a process of manufacture whereby it was converted into some other article or articles more specifically enumerated in the tariff. The merchandise in issue was differentiated from printed cotton cloth by having been subjected to an additional process of manufacture and become popularly and commercially known as cotton handkerchiefs in the piece and suitable only for use as handkerchiefs. (G. A. 1995; T. D. 13801, of 1893.)

The term "handkerchiefs * * * unfinished" in paragraph 312 of the act of 1897 was interpreted to include cloth cut into squares and other geometrical figures and in that shape principally used in the manufacture of handkerchiefs. (Meyer *v.* United States, 138 Fed. 974.)

Paragraph 358 of the act of 1913 takes from the other handkerchief paragraphs all embroidered or scalloped handkerchiefs. (Field *v.* United States, 7 Ct. Cust. Appls. 30, of 1916.)

Muffler, as commonly understood, refers to something worn around the neck or throat, and, perhaps, mainly for warmth. (Vantine *v.* United States, 4 Ct. Cust. Appls. 3, of 1913.)

Plain drawnwork handkerchiefs were held dutiable under paragraph 322 of the act of 1909, and ornamental drawnwork handkerchiefs under paragraph 349 of the same act. (Abstract 36830; T. D. 34889, of 1914.)

Hemstitched handkerchiefs ornamented with drawnwork are more specifically provided for as "handkerchiefs * * * hemmed or hemstitched," at 30 per cent under this paragraph than as "articles from which threads have been omitted, drawn, punched, or cut, and with threads introduced after weaving, forming figures or designs, not including straight hemstitching," at 60 per cent under paragraph 358. (G. A. 7769; T. D. 35675, of 1915.)

READY-MADE CLOTHING AND ARTICLES OF WEARING APPAREL, N. S. P. F.

SUMMARY.

Paragraph 256 of the 1913 act included ready-made clothing and all articles of wearing apparel not specially provided for, of cotton or other vegetable fiber, with or without india-rubber. The paragraph has been treated in three parts: (1) Ready-made clothing and articles n. s. p. f.; (2) shirt collars and cuffs; and (3) corsets, not ornamented.

Excluded from the provisions of this paragraph were wearing apparel wholly of flax, hemp, or ramie (paragraph 278), knit goods (paragraphs 259, 260, 261), various small wares enumerated in paragraph 262, and wearing apparel specially ornamented by lace or embroidery (paragraph 258).

There are no statistics as to the exact size of the industry, or the annual production of unornamented cotton wearing apparel, the industry being closely affiliated and interwoven with the silk and wool garment industry and cotton clothing ornamented by lace or embroidery.[1] It is evident from the census figures of 1914 that the total production equaled several hundred million dollars and had practically doubled since 1904. Census figures were from manufacturers only and did not include the production of custom shops. It is probable that a large part of the growth of manufacturing is due to the transfer of work from custom establishments to factories, the remainder being due to increase in consumption and export.

In 1914 exports of cotton wearing apparel amounted to $8,220,626; in 1920 to $23,489,507. Canada is usually the largest purchaser, but others of importance are Cuba, Central America, Mexico, Philippine Islands, United Kingdom, British South Africa, and Australia.

The domestic wearing apparel industry admits of only a limited amount of competition from abroad. This is largely because manufacturers are equipped with the most up-to-date machinery and resort to all available means of high-speed production, producing mainly in bulk, and keeping their products well in line with the prevailing modes of style and fashion. Many of them have established a definite market for their goods by advertising and selling under trade-marks which represent a standard of quality.

The apparent decrease under the act of 1913 was due to the exclusion of gloves which were formerly the most important import under cotton wearing apparel.[2]

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[1] The 1914 census calls attention to this fact and gives many figures on the value of production of various articles which are included in totals for other articles.

[2] For a discussion of the cotton-glove industry, see Tariff Information Survey 1-6.

General Information.

DESCRIPTION.

This section treats of articles of clothing and wearing apparel of every description (not ornamented by lace or embroidery) of which cotton or other vegetable fiber and india-rubber is the component material of chief value, except collars and cuffs, cotton corsets, and knit goods.

DOMESTIC PRODUCTION.

The wearing-apparel industry is found in varying phases to some extent in almost all thickly populated sections of the country. The establishments range in size from the home, equipped for contract work, to the large plant of a company capitalized at half a million or more.

Materials.—A large portion of the domestic production of all grades of cotton cloth such as shirting material, nainsook, cotton flannels and other material adaptable for cotton wearing apparel and clothing is consumed in the industry. Other materials are thread, tape, and bandings, buttons, clasps, hooks, and other findings. All of these are produced in ample quantities by the domestic textile and allied industries.

Equipment.—Electric cutting machines, sewing machines, buttonhole and button sewing machines which play a large part in the production of factory-made wearing apparel are all of domestic manufacture.

Methods of production.—While there are many small establishments, the bulk of production is from plants using power-driven machinery, adapted in every possible way to saving labor. Many ready-to-wear garments, such as shirts, house dresses, woven-fabric underwear, aprons and certain types of children's clothing are so standardized that large scale production admitting division of labor is possible. The workers are usually highly skilled, performing only one operation to each garment. Sixty per cent are women, paid by the piece.

Organization.—Because of the nature of the product the size of the establishments varies. Quantity production tends to concentrate the industry in large factories; but the comparatively small amount of capital required for equipment and the ready market for clothing make it an attractive field for small manufacturers who, however, find it increasingly difficult to compete on standard lines. As a rule the largest producers manufacture completed articles, but many put garments out at contract for certain operations. The majority of contractors do the work at home with only the family or one or two helpers in the organization.

Geographical distribution.—The industry is situated largely around the thickly populated centers, though small establishments are well scattered over the country. The bulk of the production is from New York, Chicago, Philadelphia, and Baltimore.

Domestic production and consumption.—Figures on the production of this class of wearing apparel and ready-made clothing are not available, but statistics for certain industries which would fall under this classification indicate that the total domestic output would be valued at several hundred million dollars.

Men's shirts to the value of $205,327,133 were manufactured in 1919 and "articles from textile fabrics for personal wear," including shirts and articles made from all fibers amounted to $3,198,147,094 in 1919.

Cotton wearing apparel is shown separately in export statistics which may be regarded as an index to the size and growth of this industry. To some extent American-made cotton clothing is shipped to all parts of the globe; during the years given in the table of exports, consignments to Canada ranged from $1,500,000 to almost $4,000,000; those to Cuba climbed steadily upward from $309,742 in 1910 to $8,101,290 in 1920; the United Kingdom and France, more variable customers, were credited with $7,618,861 and $1,116,852, respectively, in 1915, a year of heavy buying for war needs; a large part of the remainder was absorbed by Mexico, Central American countries, Argentina, Brazil, and British colonial possessions.

Exports, which include all cotton clothing, ornamented or not ornamented, are comparable with general imports. The alignment in the following table shows that exports exceeded imports in pre-war years, although not in the same proportions as since 1914. The increase in imports in the last few years was due to the large shipments received from the Philippine Islands of clothing ornamented with lace or embroidery, which amounted to $5,091,865 in 1920 and to $5,032,591 in 1921.

Foreign trade of the United States in cotton wearing apparel (except knit goods), 1910–1921.

	Exports.	Imports.	Year.	Exports.	Imports.
Fiscal year:			Fiscal year:		
1910	$4,549,921	$3,857,374	1917	$11,613,851	$2,841,793
1911	5,538,303	3,986,072	1918	8,750,698	2,794,852
1912	7,119,580	3,636,550	1919	10,873,417	3,317,655
1913	6,211,724	4,289,777	1920	19,648,303	8,065,722
1914	5,999,887	2,915,219	Calendar year:		
1915	14,743,148	1,174,427	1920	22,266,758	10,794,912
1916	11,213,181	1,516,051	1921	7,144,179	7,961,128

FOREIGN PRODUCTION.

No statistics of foreign production are available, but England, Germany, France, and Japan are the countries where the production of cotton wearing apparel has become an important factory industry; this is especially true of men's shirts and underwear. Probably in no other country is women's ready-made clothing so widely used and manufactured as in the United States. However, the manufacture of women's shirtwaists is a special industry in Nottingham, England. Quantities of handmade blouses are made in France at exceedingly low costs.

IMPORTS.

Imports of cotton wearing apparel can not be compared over an extended series of years because of the changes in classification under the different tariff acts. All cotton gloves were imported as "wearing apparel" prior to the act of 1909, wherein special provision was made for men's and boys' cotton gloves but not for women's gloves, which were still included with wearing apparel. The act of 1913

made the clause relating to cotton gloves inclusive of those worn by women. Hence statistics of cotton wearing apparel imports since October 4, 1913, do not include gloves.

In former years practically all of the cotton gloves imported came from Chemnitz, Germany, so that an approximate average of the value imported can be obtained from the Daily Trade and Consular Reports, which show that the value of cotton gloves declared for export at the American consulate in the Chemnitz district (and a small amount at Berlin) averaged $1,759,167 annually from 1909 to 1913, inclusive. Total unornamented cotton wearing apparel imports for consumption during the same five years averaged $1,891,290, allowing only a small margin for imports of other plain cotton wearing apparel included in this classification. The exports given in consular reports are for calendar years, while the imports for consumption are for fiscal years, so that the five years considered in each case do not cover identical periods; the difference, therefore, between the above figures can be regarded as indicative only in a general way of the import values of plain cotton wearing apparel, but it seems evident that they were less than in succeeding years. During the first three months of 1914 imports, which were dutiable under the act of 1909 and which included women's gloves, amounted to $677,302, whereas the imports for the remaining nine months, with all gloves excluded, amounted to only $388,062, although the rate had been reduced from 50 to 30 per cent. The total imports for 1915 were valued at $311,282 and for the fiscal year 1920 at $620,123, which increase in value, considering the rise in prices, probably did not represent an increase in the volume of trade.

Imports for the calendar year 1920 were valued at $1,226,819. Undoubtedly a large proportion of this consists of handmade articles from France, especially blouses, which during 1920, 1921, and 1922 had a wide vogue. They have been seen in the shops in great quantities and retailed at extremely low prices, from $2 up.

Imports for consumption of wearing apparel composed in part of india-rubber, though separately stated until 1910, have been included with other wearing apparel in the table given in this survey, as the values were usually small, averaging, under the act of 1897, $3,113, which was much exceeded in 1909, when imports equaled $17,441.

Consideration of the statistics of imports by countries is further complicated by the inclusion of wearing apparel ornamented with lace or embroidery. A similar process of elimination as carried out above will give additional proof that imports of plain cotton wearing apparel were small during the period when no separate statistics were available. Imports by countries of cotton wearing apparel averaged $3,697,841 (1909–1913). If imports for consumption of ornamented cotton wearing apparel, averaging $1,815,397, and the declared exports of German gloves are deducted from the imports by countries, the remainder, representing plain wearing apparel will correspond roughly to the amount obtained by the use of the figures for imports for consumption. It has been impossible to ascertain the value of plain cotton wearing apparel received from each country, though an examination of imports by countries of all cotton wearing apparel, will give an idea of the principal sources. Germany contributed the greatest values from 1910 to 1913, the bulk of which is known to

have been cotton gloves. France was second during those years, and assumed first place from 1914 to 1917, since when her exports to the United States have been surpassed by those from the Philippine Islands. All but a small proportion of those from the Philippine Islands are ornamented with lace or embroidery. In former years, the United Kingdom held third place, although far exceeded by France and Germany, but since 1915 imports from Japan have been greater than those from the United Kingdom. Japanese trade statistics disclose the fact that kimonas form the bulk of the cotton wearing apparel sent to this country. Imports in increasing amounts have come from Switzerland, and before the war a small part of this trade was with Austria-Hungary.

TARIFF HISTORY.

Ready-made clothing and articles of wearing apparel composed of cotton or other vegetable fiber were provided for in the act of 1890 at 50 per cent ad valorem with the proviso that if partially of india-rubber they should pay 50 cents per pound in addition. The tariff of 1894 reduced the rate to 40 per cent and eliminated the proviso. In the act of 1897 a clause was inserted providing for rubber garments for outside wear with a duty of 15 cents per pound in addition to the 50 per cent ad valorem regularly assessed upon the articles in the paragraph. The act of 1909 omitted the proviso, but retained the duty of 50 per cent ad valorem on all wearing apparel composed of cotton or other vegetable fiber and not ornamented with lace or embroidery. The tariff of 1913 repeated the wording of the paragraph in the act of 1909 with the addition "of cotton or other vegetable fiber and india rubber," but without a special rate for such garments, covering all items in the paragraph by a flat rate of 30 per cent ad valorem.

In the act of 1922, paragraph 919, provision is made for "clothing and articles of every description, manufactured wholly or in part, composed wholly or in chief value of cotton, and not specially provided for" at a flat rate of 35 per centum ad valorem. The time-honored phrase "made up or manufactured, wholly or in part, by the tailor, seamstress, or manufacturer" was omitted as useless verbiage. Paragraph 919 is confined to wearing apparel wholly or in chief value of cotton, omitting the former phrase "or other vegetable fiber" with the intent that wearing apparel wholly or in chief value of vegetable fibers other than cotton shall fall under schedule 10. Mention of india-rubber as a component material has been omitted as unnecessary since the paragraph covers wearing apparel wholly or in chief value of cotton, irrespective of whether india-rubber or other material is also contained in the goods. The revised wording was made as concise and definite as possible.

COMPETITIVE CONDITIONS.

The larger part of the domestic production, both in quantity and value, is of staple articles on which domestic competition is very keen. Whereas no accurate comparison of production and imports has been possible because census classifications do not coincide with nor even

parallel those of the 1913 tariff act, it is evident that imports amounting to only $1,226,819 in 1920 do not equal 1 per cent of the domestic production—in fact, they are less than 1 per cent of the domestic production of men's shirts, which amounted to $205,327,133 in 1919. The sale of wearing apparel is largely governed by style, and the American public is not, as a rule, satisfied with foreign-made garments, except in the more expensive lines. In factory-made clothes the American product can probably hold the domestic market by reason of its superiority. The small quantities of wearing apparel, with the exception of gloves, which were imported under this paragraph, support this statement.

STATISTICAL TABLES.

Cotton wearing apparel other than knit goods [1]*—Imports by countries, 1910–1922.*

[Fiscal years.]

Imported from—	1910	1911	1912	1913	1914	1915
Austria-Hungary	$52,917	$32,107	$76,791	$62,185	$27,630	$11,444
France	1,299,773	1,405,915	1,541,127	1,518,229	1,386,758	668,825
Germany	1,968,792	2,045,877	1,667,926	2,376,454	1,048,814	82,579
Switzerland	25,428	16,459	16,291	7,935	51,292	32,969
United Kingdom	314,217	322,123	179,308	174,713	194,531	129,144
Japan	42,465	46,928	65,216	79,756	107,985	194,257
Philippine Islands [2]	530	3,168	1,322	2,367	17,431	1,985
Canada	8,156	6,771	7,247	7,115	9,914	8,977
All other countries	145,096	106,724	81,322	61,023	70,864	44,247
Total [3]	3,857,374	3,986,072	3,636,550	4,289,777	2,915,219	1,174,427

Imported from—	1916	1917	1918	1919	1920
Austria-Hungary	$283				$1,680
France	901,146	$1,025,681	$532,806	$646,250	915,349
Germany	14,381	1,260			19,009
Switzerland	98,484	168,960	61,404	48,814	189,439
United Kingdom	91,917	151,491	211,693	120,470	292,515
Japan	278,021	432,414	387,270	130,800	1,253,724
Philippine Islands [2]	92,527	997,418	1,224,946	[3] 1,962,398	[3] 5,260,608
Canada	3,200	3,003	205,306	364,009	6,568
All other countries	36,092	61,566	71,427	44,914	126,830
Total [3]	1,516,051	2,841,793	2,794,852	3,317,655	8,065,722

[Calendar years.]

Imported from—	1920	1921	First quarter 1922.
Austria	$2,568	$8,222	$1,535
France	1,190,063	1,138,650	418,467
Germany	79,382	237,607	197,635
Switzerland	236,327	420,520	253,520
United Kingdom	556,410	341,028	104,524
Japan	1,215,015	458,177	43,029
Philippine Islands	7,352,274	5,154,309	838,067
Canada	5,672	29,509	2,678
All other countries	157,201	173,106	55,872
Total	10,794,912	7,961,128	1,915,327

[1] Includes cotton wearing apparel ornamented with lace or embroidery. Women's cotton gloves are also included prior to Oct. 4, 1913.
[2] Includes cotton wearing apparel imported from the Philippine Islands free of duty.
[3] Imports for consumption.

Cotton wearing apparel—Ready-made clothing and articles n. s. p. f.[1]*—Imports for consumption—Revenue, 1891–1921.*

	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
Fiscal year:				*Per cent.*
1891	35 per cent ad valorem	$79,993	$27,998	35.00
1891	50 per cent ad valorem [2]	1,006,434	502,472	49.92
1892	do	1,028,340	515,170	50.10
1893	do	1,290,624	646,305	50.08
1894	do	1,325,775	663,159	50.02
1895	do	395,230	197,635	50.00
1895	40 per cent ad valorem	2,051,521	820,608	40.00
1896	do	2,491,017	996,405	40.00
1897	do	2,469,094	987,638	40.00
1898	do	249,908	99,963	40.00
1898	50 per cent ad valorem [3]	547,006	273,523	50.00
1899	do	622,112	311,068	50.00
1900	do	746,745	373,393	50.00
1901	do	903,919	452,113	50.02
1902	do	1,022,045	511,136	50.01
1903	do	1,558,806	779,555	50.01
1904	do	1,618,892	809,594	50.01
1905	do	1,438,109	719,197	50.01
1906	do	1,705,304	852,730	50.01
1907	do	2,768,947	1,384,589	50.00
1908	do	3,328,182	1,664,451	50.00
1909	do	1,582,325	792,188	50.00
1910	do	1,840,600	920,402	50.01
1911	do	1,883,290	941,617	50.00
1912	do	1,871,924	935,740	50.00
1913	do	2,278,311	1,139,039	50.00
1914	do	677,302	338,343	49.95
1914	30 per cent ad valorem	388,062	116,390	30.00
1915	do	311,282	93,281	29.97
1916	do	291,907	85,397	29.25
1917	do	417,035	124,752	29.91
1918	do	655,405	187,991	28.68
1919	do	638,867	191,660	30.00
1920	do	620,123	186,037	30.00
Annual average		1,403,482	654,718	46.65
Calendar year:				
1920	30 per cent ad valorem	1,226,819	305,065	24.87
1921	do	[4] 793,477	201,530	25.40
1921 [5]	30 per cent plus 7 cents a pound	296,755	92,701	31.24

[1] Includes all cotton gloves prior to the act of 1909, and women's cotton gloves, imports of which averaged over $1,000,000 annually, prior to the act of 1913. This accounts for the apparent decrease in imports. Tariff Information Survey 1–6.
[2] If india-rubber used as a component material, rate of 50 cents a pound plus 50 per cent ad valorem.
[3] If india-rubber used as a component material, rate of 15 cents a pound plus 50 per cent ad valorem.
[4] Includes articles to the value of $121,711 from Philippine Islands, free of duty.
[5] Under emergency tariff act of May 27, 1921. Quantity amounted to 52,492 pounds.

Cotton wearing apparel—Ready-made clothing and articles n. s. p. f.[1]*—Domestic exports, 1910–1921.*

[Fiscal years.]

Exported to—	1910	1911	1912	1913	1914	1915
Canada	$1,540,365	$1,881,262	$2,596,126	$2,569,381	$2,489,435	$2,390,317
United Kingdom	314,880	415,767	604,505	222,105	120,378	7,618,861
Panama	521,473	428,489	584,608	498,673	415,035	324,368
Cuba	309,742	376,100	463,207	535,588	592,559	684,471
Philippine Islands	420,737	387,848	543,117	419,469	384,206	378,974
Mexico	274,709	301,901	340,461	363,787	450,503	1,105,494
British West Indies	105,899	144,101	185,608	130,756	192,010	140,541
British South Africa	144,290	215,421	199,392	163,441	93,277	60,541
Australia	284,483	370,476	417,320	76,575	98,679	75,775
Brazil	50,751	83,431	80,911	134,150	61,843	20,915
Argentina	14,871	42,837	77,411	120,700	50,321	36,432
New Zealand	86,494	130,253	118,579	35,129	34,951	41,700
Honduras	31,838	72,297	63,636	98,326	146,996	115,761
Nicaragua	32,204	57,311	64,926	91,133	110,413	35,120
Newfoundland and Labrador	50,467	88,791	88,077	97,002	128,994	62,580
France	7,664	9,259	11,796	9,954	29,237	1,116,852
Belgium	2,735	11,615	35,617	34,999	27,450	116,365
Netherlands	34,835	33,859	41,068	3,984	1,468	5,751
All other countries	321,488	487,285	603,215	606,572	572,132	412,330
Total	4,549,921	5,538,303	7,119,580	6,211,724	5,999,887	14,743,148

Exported to—	1916	1917	1918	1919	1920
Canada	$2,832,688	$3,848,388	$2,320,582	$1,862,158	$2,351,038
United Kingdom	632,331	216,914	155,178	62,927	421,186
Panama	491,978	656,933	293,329	415,932	760,401
Cuba	1,272,052	1,506,755	1,884,514	1,796,409	4,643,168
Philippine Islands	229,979	307,666	307,637	751,914	443,694
Mexico	835,901	1,234,737	960,621	840,047	726,388
British West Indies	261,937	247,639	190,095	187,459	318,857
British South Africa	233,644	189,966	163,083	286,606	488,811
Australia	156,518	170,455	92,011	177,287	165,676
Brazil	71,825	85,560	36,758	31,080	52,982
Argentina	222,524	234,322	73,179	110,027	163,805
New Zealand	66,569	57,894	18,006	44,937	48,314
Honduras	76,483	149,456	161,670	170,243	401,328
Nicaragua	84,054	112,702	103,440	125,001	164,082
Newfoundland and Labrador	167,249	202,744	256,100	486,068	559,946
France	1,155,540	106,534	488,901	104,135	573,394
Belgium	517,308	31,184	68,012	430,979	47,772
Netherlands	523,619	179,034	.....	16,814	112,931
All other countries	1,380,982	2,074,968	1,177,582	2,973,394	7,204,530
Total	11,213,181	11,613,851	8,750,698	10,873,417	19,648 303

[Calendar years.]

Exported to—	1920	1921
Canada	$1,939,978	$1,612,241
United Kingdom	393,157	112,736
Panama	821,437	227,968
Cuba	8,101,290	1,140,006
Philippine Islands	480,870	91,846
Mexico	1,054,014	879,042
British West Indies	326,617	88,211
British South Africa	482,336	52,016
Australia	271,094	37,708
Brazil	62,501	3,901
Argentina	236,779	16,800
New Zealand	59,299	14,684
Honduras	520,026	357,027
Nicaragua	181,687	51,314
Newfoundland and Labrador	364,441	108,662
France	529,702	1,003,091
Belgium	12,147	411
Netherlands	111,436	25,432
All other countries	6,317,947	1,321,164
Total	22,266,758	7,144,179

[1] 1918 and after stated separately as "Men's and boys'" and "Women's and children's."

Cotton Clothing—Domestic exports—First quarter, 1922.

		Quantity.	Value.
Men's and boys' clothing:			
Collars and cuffs [1]	dozen	39,372	$61,219
Overalls	number	37,275	47,290
Underwear not knit	do	207,525	116,576
Shirts	do	283,138	252,313
Other clothing	do	320,169	261,882
Total			739,280
Women's and children's clothing:			
Corsets [2]	dozen	251,752	453,339
Dresses and skirts	number	64,874	94,295
Shirtwaists and blouses	do	53,828	60,191
Underwear not knit	do	151,650	56,381
Other clothing	do	120,968	150,805
Total			815,011
Grand total			1,554,291

[1] See pp. 30, 31, 33. [2] See pp. 35, 36.

Rates of duty—Cotton wearing apparel—Ready-made clothing and articles n. s. p. f.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1890....	349	Clothing ready made, and articles of wearing apparel of every description, * * * and neckties or neckwear, composed of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value, made up or manufactured wholly or in part by the tailor, seamstress, or manufacturer, all of the foregoing not specifically provided for in this act,	50 per cent ad valorem.
		Provided, That all such clothing ready made and articles of wearing apparel having India rubber as a component material (not including gloves or elastic articles that are specially provided for in this act) shall be subject to a duty of	50 cents per pound, and in addition thereto 50 per cent ad valorem.
1894....	258	Clothing ready made, and articles of wearing apparel of every description, * * * neckties or neckwear, composed of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value, made up or manufactured wholly or in part by the tailor, seamstress, or manufacturer, all of the foregoing not specially provided for in this Act.	40 per cent ad valorem.
1897....	314	Clothing, ready-made, and articles of wearing apparel of every description, including neck-ties or neckwear, composed of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value, made up or manufactured, wholly or in part, by the tailor, seamstress, or manufacturer, and not otherwise provided for in this Act,	50 per cent ad valorem.
		Provided, That any outside garment provided for in this paragraph having india-rubber as a component material shall pay a duty of	15 cents per pound and 50 per cent ad valorem.
1909....	324	Clothing, ready-made, and articles of wearing apparel of every description, composed of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value, made up or manufactured, wholly or in part, by the tailor, seamstress, or manufacturer, and not otherwise provided for in this section.	50 per cent ad valorem.
1913....	256	Clothing, ready-made, and articles of wearing apparel of every description, composed of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value, or of cotton or other vegetable fiber and india rubber, made up or manufactured, wholly or in part, by the tailor, seamstress, or manufacturer, and not otherwise specially provided for in this section.	30 per cent ad valorem.
1922....	919	Clothing and articles of wearing apparel of every description, manufactured wholly or in part, composed wholly or in chief value of cotton, and not specially provided for.	35 per cent advalorem.

Court and Treasury Decisions.

Cotton wearing apparel upon which was sewn strips or bands of goods figured in different colors for ornamental purposes only were held not to be "appliquéd" and to be dutiable as cotton wearing apparel only. (United States *v.* Hamburger Levine Co., 5 Ct. Cust. Appls. 217.)

Tucked shirt bosoms of cotton or flax not embroidered or appliquéd, tuckings chief value, were held dutiable under this paragraph as wearing apparel composed in chief value of cotton rather than as articles made in whole or in part of tuckings under paragraph 358. (United States *v.* Snow's U. S. Sample Exp. Co., 6 Ct. Cust. Appls. 120, of 1915.) This decision was followed in classifying untrimmed hats made of cotton braid and thread (Abstract 38935, of 1915) and hat forms or shapes composed in chief value of cotton netting (Abstract 38719, of 1915) under this paragraph as cotton wearing apparel. This paragraph was also held more specific than articles made from pile fabrics (par. 257) for bibs made of cotton terry cloth (Abstract 38388, of 1915). Slippers made of cotton and leather, the parts of the slippers composed of each of the two materials being made separately for use in producing the completed article, cotton in chief value, were held dutiable under paragraph 324 of the act of 1909. In determining the component of chief value in merchandise of this kind, inquiry will be made to discover at what stage the several component parts were united to form the completed whole; that stage will be "its condition as found in the article." Here the expense of sewing the pieces of cotton cloth together in preparation for uniting them with the leather parts entered into the value of the cotton so employed. (United States *v.* Meadows, 2 Ct. Cust. Appls. 143, of 1911.) In the case of Chinese shoes, leather was the greatest in value of any single component, but cotton and ramie together constituted the component in chief value. They were also held dutiable as wearing apparel within this paragraph on the ground that the phrase "composed of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value" should be interpreted as if the conjunction "or" were "and." (Abstract 43034, of 1919.) Insoles for shoes in chief value of cotton (Abstract 43219, of 1919) and insoles for shoes made from the manufactured pith of a gourd, not woven, but cut into the shape of the human foot and pressed (Abstract 43039, of 1919) were also classified under this paragraph.

Waterproof garments made by cementing with rubber a cotton cloth to a cotton and wool cloth, or cotton and silk cloth to cotton and wool cloth, the rubber in each case being negligible in value, are composed in chief value of cotton, wool, or silk, according to which represents the greatest value as yarns plus its proportion on the basis of quantity, of the cost of weaving, and other expenses incurred in making the cloth and bringing it to the condition it had immediately prior to its combination with the other materials in order to form the goods in question. For this purpose cloth composed in chief value of one of these fibers should not be regarded as made entirely of it. (True Fit Waterproof Co. *v.* United States, 7 Ct. Cust. Appls. 489, of 1917.) (In some cases it has been found impracticable to distribute charges upon a quantity basis; in such cases the basis is value.)

Shoes made of leather and cotton and another vegetable fiber, the leather being more valuable than either of the other materials but less valuable than both, were held not to come within the provision in paragraph 256 of the act of 1913 for "wearing apparel * * * of which cotton or other vegetable fiber is the component material of chief value," but within the provision in paragraph 530 exempting from duty "shoes * * * in chief value of leather." (Chin *v.* United States, 11 Ct. Cust. Appls., — of 1921; T. D. 38932.)

SHIRT COLLARS AND CUFFS.

General Information.

DESCRIPTION.

Shirt collars and cuffs, as specifically mentioned in this paragraph of the 1913 act, refer to detached collars and cuffs made entirely of cotton, whether for men, women, or children. Men's collars are manufactured in a wide variety of size and shape and can in the main be divided into two classes, namely, the soft or unstarched, and the stiff or starched. Soft or unstarched collars have only recently come into general use and are made in the form of a soft folded collar and military stock; stiff collars are usually either folded, standing, or wing collars. Detached cuffs, now very little used, need not be considered separately, as the materials employed and processes of manufacture are identical with those of starched collars. As a substitute, collars and cuffs are sometimes made from paper or celluloid, but the use is not sufficiently general for them to be considered as competing articles. When the industry first started, linen was the chief material, but cotton collars, starched and unstarched, most of which are for men, now constitute the great bulk of the trade.

DOMESTIC PRODUCTION.

The manufacture of detached collars and cuffs originated in this country in 1825, and the United States has from the beginning of the industry been the largest producer and consumer.

Materials.—A number of different cotton cloths are used in the manufacture of collars and cuffs. In the stiff or starched article the cloths used are rarely other than plain-woven fabrics which are woven in the gray and afterwards bleached. Those used in the interlinings, which give body to the collar and serve as a holder for the starch, are coarse heavy sheetings. The inner surface of the collar, the portion which comes in contact with the neck of the wearer, is composed of medium weight cloths, usually printcloths, whereas the exposed outer surface of the collar is composed of somewhat finer cloths such as longcloths or nainsooks.

The following particulars, of typical cotton cloths in the gray largely used in the manufacture of stiff white collars, are supplied by leading manufacturers:

Width in inches.	Yards per pound.	Ends and picks per square inch.	Total threads per square inch.	Official average yarn count.
40	2.50	48 by 48	96	11.4
36	3.00	48 by 44	92	11.8
40	2.85	48 by 44	92	12.5
40	2.85	48 by 48	96	13.0
40	3.75	44 by 40	84	15.0
40	3.75	48 by 44	92	16.4
40	4.25	44 by 40	84	17.0
40	3.75	48 by 48	96	17.1

Width in inches.	Yards per pound.	Ends and picks per square inch.	Total threads per square inch.	Official average yarn count.
40	4.25	48 by 44	92	18.6
40	5.00	44 by 44	88	21.0
40	5.50	44 by 44	88	23.0
39	4.25	72 by 76	148	29.2
39	4.00	80 by 80	160	29.7
38½	5.35	64 by 60	124	30.4
39	4.75	68 by 72	140	30.9
39	3.90	80 by 92	172	31.1
39	3.85	96 by 112	208	37.2
39	3.95	96 by 108	204	37.4
39	4.15	96 by 100	196	37.8

In soft collars the general construction is the same except that the interlining is often made of two or three plies of a lighter cloth than that used in stiff collars. In the exposed outer surface a great variety of material is used, some of the most popular being English, French, and domestic piqués, corded madras, checks, and dobby figures, also various colored novelties, some of which contain silk or artificial silk. It is only in the novelty soft collars that any amount of imported material is used.

Equipment.—The cutting, sewing, and laundering machinery necessary in this industry is extensively manufactured in this country; practically none is required from abroad.

Methods of production.—There are six important stages in the manufacture of collars, namely, shrinking, cutting, turning, stitching, buttonholing, and laundering. While power-driven machines are used in all of the main operations and handwork is cut to a minimum, the essential factor is hand labor. Most of the workers in the actual manufacture are women, highly trained in the operation of their individual machines. Foreign methods of manufacture are largely the same, and the main difference, aside from wages, has been in the minimum age limit.[1]

Organization.—The industry is conducted on a highly efficient and well-organized basis. There are 39 establishments having a combined capitalization of $30,146,935. The major portion of the domestic production is by three companies of large physical proportions and ample capital. These companies have attained their present growth by the absorption of weaker competitors and by actual increase in volume of business. In most cases the larger concerns do their own jobbing, and thereby save a portion of the jobbers' profit.

Putting work out at contract is a common practice, especially among the small establishments.

Geographical distribution.—The industry is almost entirely centered around Troy, N. Y., which in 1914 produced 90 per cent of the entire domestic production. In 1914 there were 35 factories in the United States of which 24 were in New York State, 4 in Pennsylvania, and 7 in other States.

Value of output.—Domestic production in 1919 was valued at $47,564,949.

Domestic exports.—Previous to 1918 the figures on collars and cuffs were not given separately, but in that year they amounted to $321,346,

[1] The foreign worker often starts at 14 or under, and in some countries works an apprenticeship without pay.

the greater part of which went to Canada, Mexico, the Philippine Islands, and Cuba.

Domestic exports increased to a value of $954,374 in the fiscal year 1920. In 1921 the export of collars decreased to $341,789, in line with the marked diminution of exports in most other lines. Leading manufacturers have established branch houses in foreign countries. For the year 1913–14 two concerns reported export business amounting in total to $198,688,[2] most of which went to Great Britain and the English-speaking nations of the world, and to the West Indies, Mexico, Central and South America. This export trade has been due to quality, style, and trade-mark, rather than to price.[3]

FOREIGN PRODUCTION.

The main foreign producers of collars are Germany, England, France, and Japan, but the output of these countries has never reached the volume of domestic production nor have imported collars come into such general popular use.

IMPORTS.

Imports of collars and cuffs, always negligible, are, according to a study published by the Department of Commerce,[6] largely the kinds worn by women and children. In 1910 the importation amounted to 2,508 dozens, valued at $2,430; in 1914 imports were 5,368 dozens, with a value of $5,619; while in 1918 they were 23,808 dozens, valued at $36,252, from which the revenue was $10,876.

The largest volume of imports in any year to and including 1921, was 37,833 dozens, valued at $75,228 in 1920. Imports for 1921 were 25,167 dozens, valued at $49,075. A large proportion of the collars and cuffs imported is made of fabric containing cotton 1⅜ inches and over in length. Under the emergency tariff act of May 27, 1921, these were subject to an additional compensatory duty of 7 cents per pound.

TARIFF HISTORY.

Collars and cuffs of cotton were first specifically mentioned in the act of 1890 with a rate of 15 cents per dozen and 35 per cent ad valorem. Although not designated in the act of 1894 more specifically than as "ready-made clothing" and "neckwear," at 40 per cent ad valorem, the Department of Commerce retained the statistical classification "collars and cuffs, entirely of cotton," so that the figures which appear in the table of imports for consumption for the years under the act of 1894 are directly comparable with those of preceding years. The word "shirt" qualifying collars and cuffs first appeared in the act of 1897 and has been retained in subsequent acts. The provisions under the acts of 1897 and 1909 were identical, assessing a compound rate of 45 cents per dozen pieces and 15 per cent ad valorem. In 1913 this was equivalent to an ad valorem duty of 59.59 per cent and a specific duty of 60.1 cents per dozen pieces. The tariff rate of the act of 1913 was 30 per cent, which in 1920 was equivalent to a specific rate of 56.3 cents per dozen pieces. The rate under the act of 1922 is 30 cents per dozen pieces and 10 per centum ad valorem.

[2] See Department of Commerce report, Miscellaneous Series No. 36, "The shirt and collar industries."
[3] See tariff hearings before Committee on Ways and Means, 1913, pp. 3822, ff.

COMPETITIVE CONDITIONS.

Imports increased under the lowered rate of duty but that they were not competitive with the domestic product was evinced by the fact that in 1920 they amounted to less than two-tenths of 1 per cent of the total output of 1919. Moreover, exports for 1920 were 23 times as great as imports and had increased threefold from 1918 to 1920.

The lack of competition was due largely to the fact that the domestic industry has been long established and large enough to take care of all requirements and to the further fact that American makes are regarded as superior and as more up to date than any yet evolved by foreign producers.

STATISTICAL TABLES.

Cotton wearing apparel—Shirt collars and cuffs[1]*—Imports for consumption—Revenue, 1891–1921.*

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.	Actual and computed specific rate.
Fiscal years.		*Dozen.*				*Per ct.*	
1891	15 cents per dozen pieces and 35 per cent.	1,867	$1,195	$698	$0.640	58.44	$0.379
1892	do	1,484	621	440	.418	70.86	.296
1893	do	929	419	286	.451	68.26	.307
1894	do	2,526	9,860	3,830	3.903	38.84	1.516
1895	do	361	3,188	1,170	8.831	36.69	3.241
	40 per cent	23,056	75,061	30,024	3.256	40.00	1.302
1896	do	15,890	23,888	9,555	1.503	40.00	.601
1897	do	4,164	4,950	1,980	1.189	40.00	.476
1898	do	92	110	44	1.196	40.00	.478
	45 cents per dozen pieces and 15 per cent.	20,537	15,031	11,496	.732	76.48	.559
1899	do	15,036	11,159	8,440	.742	75.64	.561
1900	do	1,382	1,666	872	1.205	52.33	.631
1901	do	330	258	187	.781	72.87	.567
1902	do	949	976	573	1.028	58.75	.604
1903	do	1,493	1,797	942	1.203	52.40	.631
1904	do	378	359	224	.952	62.23	.593
1905	do	622	769	395	1.236	51.41	.633
1906	do	696	425	377	.611	88.75	.541
1907	do	1,075	1,107	650	1.030	58.72	.605
1908	do	1,420	1,365	844	.961	61.83	.594
1909	do	6,137	5,405	3,572	.881	66.09	.582
1910	do	2,508	2,430	1,493	.969	61.44	.595
1911	do	7,015	6,454	4,125	.920	63.90	.588
1912	do	7,565	6,944	4,446	.918	64.03	.588
1913	do	7,727	7,798	4,647	1.009	59.59	.601
1914	do	1,245	1,338	761	1.075	56.88	.611
	30 per cent	4,123	4,281	1,284	1.038	30.00	.311
1915	do	2,508	2,814	844	1.122	30.00	.337
1916	do	6,558	7,276	2,183	1.109	30.00	.333
1917	do	23,857	30,576	9,173	1.282	30.00	.384
1918	do	23,908	36,252	10,876	1.523	30.00	.457
1919	do	8,718	16,523	4,957	1.896	30.00	.569
1920	do	22,667	42,537	12,761	1.877	30.00	.563
Annual average		7,291	10,827	4,472	1.485	41.30	.613
Calendar year:							
1920	30 per cent	37,833	75,228	22,568	1.99	30.00	.596
1921	do	11,647	24,095	7,228	2.07	30.00	.621
1921[2]	30 per cent and 7 cents per pound.	13,520	24,980	7,936	1.85	31.77	.587

[1] The word "shirt" was not used in connection with these imports prior to the act of 1897.
[2] Under emergency tariff act of May 27, 1921. Quantity equivalent to 6,321 lbs.

Cotton wearing apparel—Shirt collars and cuffs—Domestic exports, 1918–1922.

[Fiscal years.]

Exported to—	1918 [1]	1919	1920	Exported to—	1918 [1]	1919	1920
Cuba	$134,382	$113,618	$269,249	Dominican Republic	$11,892	$12,577	$32,139
Philippine Islands	44,039	31,268	20,102	China	11,159	13,768	1,763
Mexico	30,657	28,326	54,649	All other countries	62,836	244,212	504,601
Canada	14,570	10,547	23,572				
Panama	11,961	17,078	48,299	Total	321,346	471,394	954,374

[Calendar years.]

Exported to—	1920	1921	First quarter 1922.	Exported to—	1920	1921	First quarter 1922.
Cuba	$284,971	$157,654	$25,322	Dominican Republic	$41,777	$4,799	$990
Philippine Islands	45,754	4,903	870	China	2,916	3,433	1,044
Mexico	66,869	58,942	10,994	All other countries	299,101	79,021	15,722
Canada	22,619	19,874	3,580				
Panama	52,235	13,163	2,697	Total	816,142	341,789	61,219

[1] Not separately recorded prior to 1918.

Cotton wearing apparel—Shirt collars and cuffs—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1890	372	Collars and cuffs, composed entirely of cotton	15 cents per dozen pieces and 35 per cent ad valorem.
1894	258	* * * articles of wearing apparel of every description * * * neck wear, composed of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value, * * * not specially provided for in this Act.	40 per cent ad valorem.
1897	338	Shirt collars and cuffs, composed of cotton	45 cents per dozen pieces and 15 per cent ad valorem.
1909	348	do	Do.
1913	256	* * * shirt collars and cuffs of cotton, not specially provided for in this section.	30 per cent ad valorem.
1922	919	* * * Shirt collars and cuffs, of cotton, not specially provided for.	30 cents per dozen pieces and 10 per centum ad valorem.

CORSETS, NOT ORNAMENTED.

General Information.

DESCRIPTION.

The corset was not specially mentioned in paragraph 256 of the act of 1913, but was included by virtue of being wearing apparel. It is an inner article of dress, usually stiffened by strips of steel or whalebone, to support the body or modify its shape. Paragraph 256 covered only plain cotton corsets, those ornamented by lace or embroidery being included in paragraph 358, Schedule N.

DOMESTIC PRODUCTION.

This is one of the largest and most important individual branches of the domestic clothing and wearing-apparel industry. In 1919 there was approximately $43,516,486[1] invested capital, but as nearly every company produces all grades of corsets it is impossible to say just what portion of this capital was concerned with the manufacture of the plain cotton variety. In fact, almost all corsets have at least a finish of narrow lace.

Materials.—The main material used is coutil, often called corset cloth. It is strong, heavy, closely woven cloth made of medium coarse yarns. The weave is usually a five-harness warp sateen. Other materials used are wool cloth, elastic fabric, thread, metal clasps or hooks, together with flexible steel called ribs or bones, and laces. The bulk of these materials is of domestic manufacture. Formerly strips of whalebone, because of their strength and spring, were employed to give stiffness to corsets, but the scarcity and high price of this material has almost precluded its use.

Equipment.—Power-sewing machines play a large part in the manufacture of corsets. These, as well as machines for various special operations, are of domestic manufacture.

Methods of production.—There is no general standardization in the industry; each manufacturer makes special styles, and even these change from season to season, according to the trend of fashion. The manufacture necessitates considerable hand work in conjunction with the sewing machine, but special machinery is employed whenever possible. About 83 per cent of the workers are women.

Geographical distribution.—The State of greatest production is Connecticut, the industry centering around Bridgeport; other producing States are New York, Michigan, New Jersey, Massachusetts, and Illinois.

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[1] Federal Census, 1919

Organization.—The industry is conducted on a highly efficient and well-organized scale, the major portion of the production coming from establishments capitalized at $100,000 to $1,000,000. In 1919 there were in all 188 concerns employing a total of 18,415 wage-earners.

Domestic production and consumption.—Exact figures on the production of plain cotton corsets as distinct from ornamented, are not available, but the entire value in 1914 was $40,551,000,[2] and in 1919 $475,541,959, the major portion of which was for domestic consumption.

EXPORTS.

Domestic exports, though fluctuating, are large. In 1914 exports were valued at $2,226,739; in 1918 at $1,819,767; in 1920 at $3,583,767; and in 1921 at $1,695,555. These figures represent the total domestic exports of all kinds. The best markets for American-made corsets are now found in the United Kingdom, Australasia, Canada, and British South Africa.

IMPORTS.

Imports of plain cotton corsets are practically negligible. In 1910, imports amounted to 2,390 dozen pairs, valued at $47,653; in 1914, 150 dozen pairs, valued at $1,273; and in 1921, 1,144 dozen pairs, valued at $7,599. The revenue derived therefrom in the last year was $2,280. Even combining the imports of plain and ornamented corsets the totals are small, in comparison with domestic production, amounting to a value of $54,047 in 1910, to $43,486 in 1914, and to $23,386 in 1921.

TARIFF HISTORY.

Corsets have never been specifically mentioned in the tariff acts since 1883, when all grades of the article were classed under one paragraph at 35 per cent ad valorem. Under the acts of 1890, 1894, 1909, 1913, and 1922 they were classed, when not ornamented, under articles of wearing apparel not specifically mentioned, with respective rates of 50 per cent, 40 per cent, 50 per cent, 30 per cent, and 35 per cent ad valorem.

COMPETITIVE CONDITIONS.

The domestic industry, while in a highly competitive state as a whole, hardly admits of any competition from abroad. It has been long established and takes care of all domestic needs with articles of the latest accepted style and of better workmanship than are produced elsewhere. The reduction of the tariff from 50 per cent to 30 per cent in 1913 had no effect on imports; in fact the imports in 1914 were less than in 1913.

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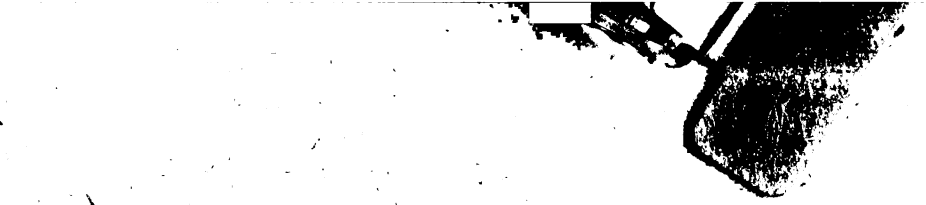
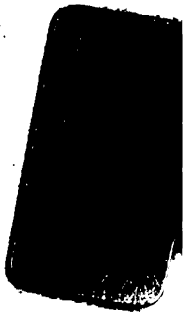
[2] Federal Census, 1914.





UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPH 254 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

COTTON CLOTHS PROVIDED FOR EO NOMINE

Paragraph 254:

- **Cloth of Cotton or Other Vegetable Fiber and Silk**
- **Tracing Cloth**
- **Cotton Cloth Filled or Coated, all Oilcloths** (except Silk Oilcloths and Oilcloths for Floors), **and Cotton Window Hollands**
- **Waterproof Cloth, of Cotton or Other Vegetable Fiber**

Paragraph 257:

- **Cotton Pile Fabrics, and Manufactures thereof**

Paragraph 258:

- **Tapestries and other Jacquard Figured Upholstery Goods**

Paragraph 263:

- **Cotton Table Damask, and Manufactures thereof**

REVISED EDITION

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PREFACE.

This is one of a series of tariff information surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this, industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act, reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and index," which contains—

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and index" the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of W. A. Graham Clark, special expert, and of others.

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COTTON CLOTHS PROVIDED FOR EO NOMINE.

TARIFF ACT OF OCTOBER 3, 1913.

Text of Schedule I relating to cotton cloths provided for eo nomine:

PAR. 254. Cloth composed of cotton or other vegetable fiber and silk, whether known as silk-striped sleeve linings, silk stripes, or otherwise, of which cotton or other vegetable fiber is the component material of chief value, and tracing cloth, 30 per centum ad valorem; cotton cloth filled or coated, all oilcloths (except silk oilcloths and oilcloths for floors), and cotton window hollands, 25 per centum ad valorem; waterproof cloth composed of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value or of cotton or other vegetable fiber and india rubber, 25 per centum ad valorem.

PAR. 257. Plushes, velvets, plush or velvet ribbons, velveteens, corduroys, and all pile fabrics, cut or uncut, whether or not the pile covers the entire surface; any of the foregoing composed wholly or in chief value of cotton or other vegetable fiber, except flax, hemp, or ramie; and manufactures or articles in any form, including such as are commonly known as bias dress facings or skirt bindings, made or cut from plushes, velvets, velveteens, corduroys, or other pile fabrics composed of cotton or other vegetable fiber, except flax, hemp, or ramie, 40 per centum ad valorem.

PAR. 258. * * * tapestries, and other Jacquard figured upholstery goods, composed wholly or in chief value of cotton or other vegetable fiber; any of the foregoing, in the piece or otherwise, 35 per centum ad valorem; * * *.

PAR. 263. Cotton table damask, and manufactures of cotton table damask, or of which cotton table damask is the component material of chief value, not specially provided for in this section, 25 per centum ad valorem.

SUMMARY.

Cotton cloths in general were provided for in paragraph 252 of the act of 1913. On these "countable cotton cloths" there were levied progressive rates of duty based on the average yarn count as officially calculated from the construction (ends per square inch) and the weight. Certain cotton cloths were excepted from these progressive rates and were provided for eo nomine at flat rates of duty, assessed without regard to yarn count, construction, or weight.

The relative importance of the various eo nomine cloths, as compared with countable cotton cloths, can be best illustrated by showing the average annual imports for consumption during the last two tariff acts.

55032—23—I-4——2

TABLE 1.—*Cotton cloths (all kinds)—Imports for consumption under tariff act of 1909.*

[Covering period of 1,520 days, from Aug. 6, 1909, to Oct. 3, 1913, inclusive.]

Classification.	Total quantity.	Total value.	Total duty collected.	Value per square yard.	Actual and computed ad valorem duty.	Actual and computed specific duty per square yard.
	Sq. yds.			*Cents.*	*Per cent.*	*Cents.*
Countable cotton cloths	211,151,294	$34,155,180	$14,448,388	16.18	42.30	6.84
Eo nomine cloths	(1)	14,469,048	7,061,969	(1)	48.81	(1)
Cotton pile fabrics	16,015,029	7,849,457	4,029,027	49.01	51.33	25.16
Jacquard figured upholstery goods	(1)	1,399,417	699,708	(1)	50.00	(1)
Cotton table damask in the piece	(1)	1,599,173	639,880	(1)	40.01	(1)
Filled or coated cloths	12,491,744	1,699,396	714,632	13.60	42.05	5.72
Tracing cloths	9,204,262	1,508,858	761,984	16.39	50.50	8.28
Waterproof cloths	827,230	269,878	136,034	32.62	50.41	16.44
Cotton-and-silk cloths	431,266	142,869	80,704	33.13	56.49	18.71
Total cotton cloths	(1)	48,624,228	21,510,357	(1)	44.24	(1)

[1] No data.

TABLE 1A.—*Cotton cloths (all kinds)—Imports for consumption under tariff act of 1913.*

[Covering period of 3,275 days, from Oct. 4, 1913, to Sept. 21, 1922, inclusive.]

Classification.	Total quantity.	Total value.	Total duty collected.	Value per square yard.	Actual and computed ad valorem duty.	Actual and computed specific duty per square yard.
	Sq. yds.			*Cents.*	*Per cent.*	*Cents.*
Countable cotton cloths	695,564,870	$188,371,187	$40,358,143	27.08	21.42	5.80
Eo nomine cloths	(1)	37,597,660	12,644,334	(1)	33.63	(1)
Cotton pile fabrics	18,966,274	10,808,871	4,325,714	56.99	40.02	22.81
Jacquard figured upholstery goods	(1)	12,898,878	4,543,984	(1)	35.23	(1)
Cotton table damask in the piece	(1)	4,319,556	1,081,510	(1)	25.04	(1)
Filled or coated cloths	12,735,747	2,579,089	645,623	20.25	25.03	5.07
Tracing cloths	19,792,790	5,435,481	1,631,277	27.46	30.01	8.24
Waterproof cloths	1,800,683	912,759	221,588	50.69	24.31	12.32
Cotton-and-silk cloths	2,006,548	643,026	194,338	32.05	30.22	9.69
Total cotton cloths	(1)	225,968,847	53,002,477	(1)	23.46	(1)

[1] No data.

Table 1 shows that of $48,624,228 worth of cotton cloths imported under the act of 1909, $34,155,180, or 70.24 per cent, consisted of countable cotton cloths, dutiable at progressive rates of duty, and $14,469,048, or 29.76 per cent, of cotton cloths provided for eo nomine, at flat (fixed) rates of duty. Table 1a shows that of $225,968,847 worth of cotton cloths imported under the act of 1913, $188,371,187, or 83.36 per cent, consisted of countable cotton cloths, and $37,597,660, or 16.64 per cent, of cotton cloths provided for eo nomine. Corresponding proportions according to quantities are not available because some of the eo nomine cloths were recorded only by value.

The question arises as to why certain cloths are singled out for special tariff treatment. The flat rates of duty levied on these eo nomine cloths are, in practically every instance, higher than the aver-

age rate of duty levied on cotton cloths in general, which would indicate that special rates were deemed desirable, because of higher labor cost percentages or for other reasons, but the exemption of these cloths from progressive rates of duty is doubtless due in most instances to the difficulty of ascertaining exactly the number of threads per square inch or the average yarn count. This would apply to cotton pile fabrics, to tapestries and other double-texture cloths, and to most filled or coated cloths, where the fabric would have to be disintegrated or the finish removed to ascertain the physical details for classification under progressive rates of duty. In the case of cotton-and-silk cloths it was probably due to the higher value and different yarn numbering system of silk as compared with cotton. (In the act of 1922, however, cotton-and-silk cloths have been made dutiable as countable cotton cloths, with an additional duty of 5 per cent ad valorem.) In the case of cotton table damask no reason is apparent for differentiation from other countable cotton cloths. These goods are composed of coarse to medium yarns, and the labor cost percentage is less than that of many other Jacquard fabrics of finer yarn counts which are dutiable at the regular progressive rates of duty.

In almost every American tariff some cotton cloths have been provided for by name at rates of duty higher than those applying to cotton cloths in general. In the tariff of 1790, for instance, there was a provision for a special rate of 7½ per cent ad valorem on "cambrics, muslins, muslinets, laces, gauzes, chintzes, and colored calicoes and nankeens," [1] whereas cotton cloths in general fell under the 5 per cent ad valorem levied on "all other goods." It may be noted also that in the tariff of 1864 there was a special duty, higher than that applicable to other cotton cloths, levied on "cotton jeans, denims, drillings, bedticking, ginghams, plaids, cottonades, pantaloon stuffs, and goods of like description," and that special treatment of such cloths was not abolished until 1883.[2] Cotton duck was provided for by name in the acts of 1894 and 1897; this eo nomine provision was dropped in 1909.[3]

Of the cotton cloths provided for eo nomine in the tariff act of 1913, it may be noted that cotton pile fabrics were the first to secure separate enumeration. The acts of 1790 and 1797 provided for "velvets and velverets," the first probably relating to silk velvets and the latter to cotton velvets or velveteens. In the acts from 1846 to 1883, inclusive, there was provision for "cotton velvet," but it was not until 1890 that the provision was expanded to the basis of the present wording in order to cover all cotton pile fabrics. Cotton damask was first mentioned in 1883 and cotton table damask in 1897. The first provision for cotton cloth containing an admix-

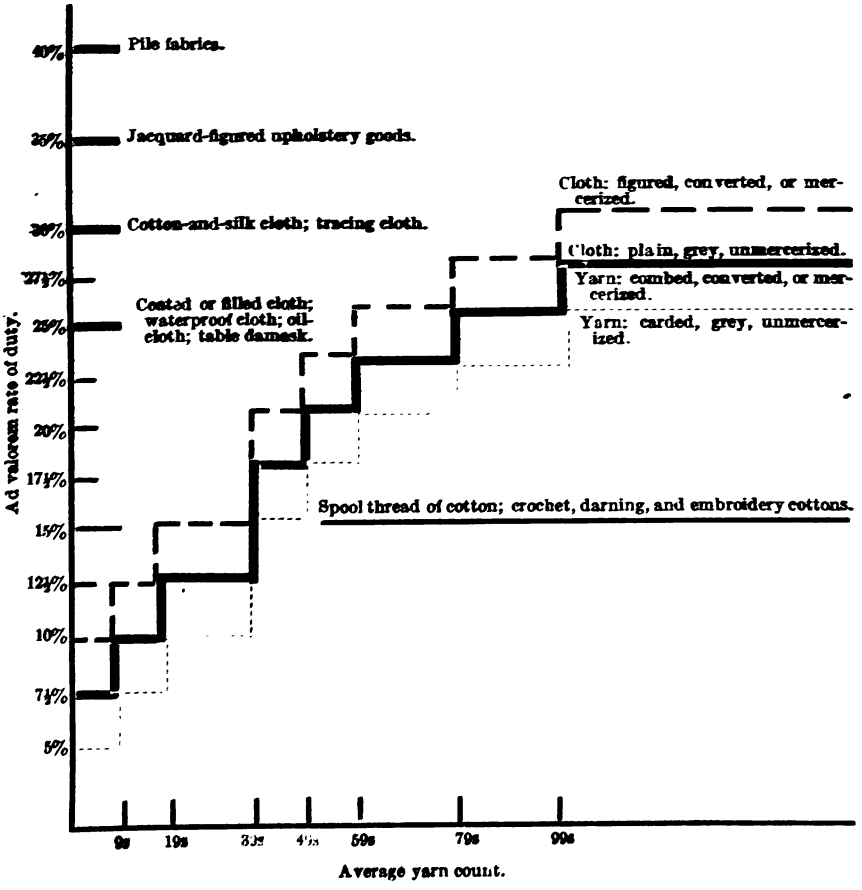
[1] These nankeens were the coarse narrow cotton cloths woven on hand looms in China. Nankeens are referred to in several of the earlier American tariffs, and imports and reexports were recorded separately for the fiscal years 1821–1842, inclusive. During these 22 years imports of nankeens were valued at a total of $4,469,198, ranging from a high of $823,365 in 1822 to a low of $53 in 1842. Reexports of nankeens were for the same 22 years valued at a total of $5,672,720. This higher value probably includes intermediate charges, but would tend to show that imports of nankeens were for reexport only. These reexports were widely distributed, going particularly to Mexico, Chile, Danish West Indies, Gibraltar, the Hanse Towns and German ports, Trieste and other Adriatic ports.

[2] During the 19 years, 1865–1883, inclusive, imports of the above-mentioned cloths, which were mainly coarse yarn-dyed fabrics, were recorded separately and averaged annually 4,404,636 square yards, valued at $826,891.

[3] The rates of duty on cotton duck in the acts of 1894 and 1897 were higher than on other countable cotton cloths, although duck is the heaviest and coarsest yarn fabric made of cotton and the one for which in the cost of production material constitutes the largest item and labor the smallest.

ture of silk was in the act of 1890. Waterproof cloth was provided for as early as 1883, but the act of 1897 was the first to mention the material, in "waterproof cloth, composed of cotton or other vegetable fiber." "Cotton cloth, filled or coated" was also listed for the first time in 1897. Oilcloths were mentioned in several of the earlier tariffs, but the phrasing "all oilcloths (except silk oilcloths and oilcloths for floors)" dates from 1909, as does the first mention of cotton window hollands and of tracing cloth. The act of 1909 was also the first in which there was a provision for "tapestries and other Jacquard figured upholstery goods," although with the modifying clause "weighing over 6 ounces per square yard"; the omission in the act of 1913 of this modifying clause caused considerable litigation and confusion.

CHART.—*Comparison of progressive rates of duty on cotton yarns (par. 250) and countable cotton cloths (par. 252) with the flat rates of duty on spool thread of cotton and crochet, darning, and embroidery cottons (par. 251), and the various cotton cloths provided for eo nomine (pars. 254, 257, 258, and 263), under the act of 1913.*



CLASSIFICATION.

Cotton cloths that were exempted from the progressive rates of duty levied on countable cotton cloths in general, in paragraph 252 of the act of 1913, were provided for eo nomine at flat rates of duty under paragraphs 254, 257, 258, and 263. Under the act of 1922 countable cotton cloths are dutiable under the provisions of paragraphs 903, 906, and 908, and eo nomine cloths are dutiable under paragraphs 905, 907, 909, 910, and 911.

CLOTHS OF COTTON (OR OTHER VEGETABLE FIBER) AND SILK.

[Paragraph 254, act of 1913; paragraph 908, act of 1922.]

SUMMARY.

The use of silk in the domestic cotton industry has greatly increased during the last decade, so much so that the production of cotton cloths ornamented with silk has become a prominent feature of the trade.

The import trade in cotton cloths containing silk is negligible as compared with the huge and increasing domestic output of such fabrics. Imports as recorded during the 30 fiscal years 1891–1920 averaged only $43,397 a year, with a record import of only $113,225 in 1915. For the calendar year 1921 the imports were 297,311 square yards valued at $79,882.

Exports of cotton cloths containing silk are not recorded separately but are considered to be fully as large as, if not larger than, the imports.

GENERAL INFORMATION.

DESCRIPTION.

Cloths of cotton and silk under paragraph 254 of the act of 1913 included any cloth exceeding 12 inches in width, regardless of weight or construction, which had cotton or other vegetable fiber as its component material of chief value and which included silk.

This provision was in practice confined almost entirely to cotton-and-silk cloths, as imports of silk-mixed fabrics in which a vegetable fiber other than cotton predominates in value are very rare.

DOMESTIC PRODUCTION.

Cotton-and-silk cloths have become increasingly popular during the last decade. The more staple varieties of cotton cloths containing an admixture of silk are silk-striped sleeve linings and various types of silk-striped shirtings. The greatest increase in production, however, has been in novelty dress goods, such as fancy voiles and ginghams.

Materials.—Domestic manufacturers in the majority of cases spin the cotton yarn used in the various grades of goods. The silk is usually purchased in the form of yarn, although a few of the cotton mills now have their own throwing plants and buy their silk in the raw state.

Equipment and methods of production.—Many fine-yarn cotton mills are equipped to weave silk-and-cotton cloths, as, with the exception of

the preparation of the yarn, the processes are the same. The machinery is mainly of domestic manufacture, and the only difficulty lies in training labor in the handling of silk.

Organization.—Very few mills have been organized for the exclusive manufacture of silk-and-cotton goods, although many cotton mills have taken it up as a novelty side line. These are mostly the larger and better-equipped mills previously turning out novelty cotton goods.

Geographical distribution.—While the major portion of the goods are made in the New England mills, several of the leading cotton mills of the South are now turning out some mixed-silk goods.

History of production.—There is no reason why domestic manufacturers could not have produced these goods long ago, lacking little but the knowledge of handling silk. Once started, however, the industry has progressed rapidly and there has been a phenomenal growth in production and in variety of patterns and uses. The first production was in novelty goods of very high grade. These were rapidly absorbed by the trade and at a good profit to the producer. As the demand increased and the goods became better known, converters, in order to meet competitive conditions, began to order a lighter construction of goods. These were produced at a correspondingly lower price and gave practically the same effect.

Domestic production and consumption.—Shirting and dress goods may be made much more elaborate by the introduction of silk threads without materially increasing the production cost. This fits in with the domestic production methods better than the making of novelties that require the use of more complicated and costly weaves. For this reason the domestic industry has been very successful and made rapid progress in the production of novelties containing silk. The value of the domestic production was not separately stated in the census reports until 1919, when shirtings (silk striped) were produced to the extent of 33,865,803 square yards, valued at $12,379,237, and cloths composed of cotton and silk or other vegetable fiber and silk (except silk-striped shirtings) were produced to the extent of 51,404,771 square yards, valued at $18,587,057.

Domestic mills have supplied the great bulk of the consumption and are largely responsible for the new designs which have materially increased the consumption of these fabrics.

DOMESTIC EXPORTS.

The export of cotton cloths containing silk is not recorded but is probably larger than the import. Even before the war the United States was exporting some silk-ornamented cotton cloths, including the shipment of dotted silk and cotton mulls to England itself, and with the expansion of the American export trade in cotton cloth in general there has been a considerable increase in the export of fancy fabrics, including many containing more or less silk.

IMPORTS.

Imports of cotton-and-silk cloths are so small that they have never been a factor in the domestic market; in recent years the tendency has been for imports to decline in quantity and to be confined almost entirely to the more staple lines.

Imports of cotton-and-silk cloths during the 30 fiscal years, 1891–1920, are shown in Table 2, which presents a complete statistical record of the importation of such goods since their first enumeration in the act of 1890. It is seen that imports of these goods have ranged from a low of 57,887 square yards, valued at $26,102, in 1894, to a high of 475,408 square yards, valued at $113,225, in 1915, with an average for the 30 years, 1891–1920, of only 149,583 square yards, valued at $43,397. During these 30 years the average value per square yard has ranged from 11.93 cents, in 1897, to 56.12 cents in 1920, with an average of 29.01 cents. For the calendar year 1921 the average value per square yard was 26.87 cents.

On an ad valorem basis the duty has ranged from 30 per cent, under the 1913 tariff, to 71.16 per cent in 1891, with a 30-year average of 50.34 per cent. For the calendar year 1921 the ad valorem rate averaged 31.35 per cent. On a specific basis the duty has ranged from 6.57 cents, in 1916, to 25.78 cents in 1894, with a 30-year average of 14.60 cents, per square yard. For the calendar year 1921 the equivalent specific duty was 8.42 cents per square yard.

TARIFF HISTORY.

Cotton cloth containing an admixture of silk was first provided for in the act of 1890 (par. 348), the duty being fixed at 10 cents per square yard and 35 per cent ad valorem. In the act of 1894 (par. 260), the duty was changed to a flat rate of 45 per cent ad valorem. In the act of 1897 (par. 311) this provision was widened to include cloths of cotton "or other vegetable fiber" containing an admixture of silk. The rate was fixed at 8 cents per square yard and 30 per cent ad valorem, with a minimum of 50 per cent. With the exception of the addition of a few words necessary to complete the sense of the 1897 provision, the wording of this provision in the act of 1909 (par. 321) was the same and there was no change in the rate of duty. In the act of 1913 (par. 254) there was no change in the wording, with the exception of the omission of the minimum proviso, but the rate was changed to a flat 30 per cent ad valorem.

In the act of 1922 (par. 908) the predominant material is restricted to cotton by the omission of the words "or other vegetable fiber," but the ornamenting material may be either silk or artificial silk, the latter being mentioned in this connection for the first time. The system of levying duties is also changed by reason of the removal of these fabrics from the eo nomine classification at a fixed rate of duty and their inclusion under the countable cotton-cloth classification at progressive rates of duty, based on the average yarn count, but with a surtax of 5 per cent ad valorem.

COMPETITIVE CONDITIONS.

The domestic industry is in a highly competitive state and, while there are no available figures to show exactly how many concerns produce goods directly under this class, it is known that there are many competing establishments who maintain designing departments and are continually producing new designs and effects. There is practically no competition from abroad.

STATISTICAL TABLES.

TABLE 2.—*Cloths of cotton (or other vegetable fiber) and silk* [1]*—Imports for consumption—Revenue.*

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per square yard.	Actual and computed ad valorem rate.	Actual and computed specific duty per square yard.
		Sq. yds.			*Cents.*	*Per cent.*	*Cents.*
1891	10 cents per square yard and 35 per cent ad valorem.	336,094	$92,946	$66,140	27.65	71.16	19.68
1892	do	298,202	108,144	67,671	36.26	62.57	22.69
1893	do	198,803	74,815	46,066	37.63	61.57	23.17
1894	do	57,887	26,102	14,924	45.09	57.18	25.78
1895	do	3,361	1,494	859	27.72	46.10	12.78
	45 per cent ad valorem	58,187	15,569	7,006			
1896	do	99,097	21,232	9,554	21.42	45.00	9.64
1897	do	172,173	20,534	13,290	11.93	45.00	7.72
1898	do	3,884	976	439	30.05	57.77	17.36
	8 cents per square yard and 30 per cent ad valorem.[2]	112,153	33,891	19,703			
1899	do	134,435	30,435	19,656	22.64	64.58	14.62
1900	do	139,297	28,132	19,352	20.19	68.79	13.89
1901	do	174,358	35,929	24,736	20.61	68.85	14.19
1902	do	140,043	31,010	20,443	22.14	65.92	14.60
1903	do	71,199	19,222	11,476	27.00	59.70	16.12
1904	do	68,275	16,512	9,955	24.18	60.29	14.58
1905	do	60,645	16,069	9,535	26.50	59.34	15.72
1906	do	81,391	22,880	13,191	28.11	57.65	16.21
1907	do	92,596	26,384	15,135	28.49	57.36	16.35
1908	do	182,024	53,027	30,621	29.13	57.75	16.82
1909	do	98,188	36,016	19,700	36.68	54.70	20.06
1910	do	91,057	23,428	14,313	29.59	58.38	17.27
	8 cents per square yard and 30 per cent ad valorem.[2]	13,757	7,584	3,792			
1911	do	83,895	27,499	15,382	32.77	55.94	18.33
1912	do	100,107	37,326	20,213	37.29	54.15	20.19
1913	do	135,392	41,967	24,358	31.00	58.04	17.99
1914	do	17,449	8,112	4,301	31.55	32.78	10.34
	30 per cent ad valorem	195,698	59,142	17,743			
1915	do	475,408	113,225	33,967	23.82	30.00	7.14
1916	do	275,755	60,359	18,108	21.88	30.00	6.57
1917	do	222,680	58,662	17,599	26.34	30.00	7.90
1918	do	61,676	23,809	7,143	38.60	30.00	11.58
1919	do	103,585	57,225	17,167	55.24	30.00	16.57
1920	do	128,735	72,250	21,675	56.12	30.00	16.84
Annual average		149,583	43,397	21,844	29.01	50.34	14.60
July 1 to Dec. 31, 1920	30 per cent ad valorem.	137,660	77,406	23,141	56.23	30.00	16.81
Calendar year 1921	do.[3]	[4] 297,311	79,882	25,042	26.87	31.35	8.42
Jan. 1 to Sept. 21, 1922.	do.[3]	[5] 108,040	41,066	12,753	38.01	31.05	11.80

[1] These cloths, containing an admixture of silk, were first mentioned in the act of 1890 and imports not separately recorded prior to the fiscal year 1891; the above table is therefore the complete statistical record of imports.

[2] "*Provided*, That no such cloth shall pay a less rate of duty than 50 per cent ad valorem."

[3] Plus 7 cents a pound if containing cotton of 1⅛-inch staple or longer. (Emergency tariff act of May 27, 1921.)

[4] Includes 184,802 square yards (15,392 pounds), valued at $39,359, paying additional duty of $1,077 because of the 7 cents a pound surtax levied by the emergency tariff act.

[5] Includes 44,652 square yards (6,194 pounds), valued at $17,949, paying additional duty of $434 because of the 7 cents a pound surtax levied by the emergency tariff act.

Cloths of cotton (or other vegetable fiber) and silk—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1890	348	* * * *Provided further*, That on cotton cloth, bleached, dyed, colored, stained, painted, or printed, containing an admixture of silk and not otherwise provided for, there shall be levied, collected, and paid a duty of.	10 cents per square yard and in addition thereto 35 per cent ad valorem.
1894	260	* * * sleeve linings or other cloths, composed of cotton and silk, whether known as silk stripe sleeve lining, silk stripes, or otherwise.	45 per cent ad valorem.
1897	311	Cloth, composed of cotton or other vegetable fiber and silk, whether known as silk-striped sleeve linings, silk stripes, or otherwise, of which cotton is the component material of chief value.	8 cents per square yard and 30 per cent ad valorem.
		Provided, That no such cloth shall pay a less rate of duty than.	50 per cent ad valorem.
1909	321	Cloth, composed of cotton or other vegetable fiber and silk, whether known as silk-stripe sleeve lining, silk stripes, or otherwise, of which cotton or other vegetable fiber is the component material of chief value.	8 cents per square yard and 30 per cent ad valorem.
		Provided, That no such cloth shall pay a less rate of duty than.	50 per cent ad valorem.
1913	254	Cloth, composed of cotton or other vegetable fiber and silk, whether known as silk-striped sleeve linings, silk stripes, or otherwise, of which cotton or other vegetable fiber is the component material of chief value, * * *	30 per cent ad valorem.
1922	908	Cloth in chief value of cotton, containing silk or artificial silk, shall be classified for duty as cotton cloth under paragraphs 903, 904, and 906, and in addition thereto there shall be paid on all such cloth.	5 per cent ad valorem.
		Provided, That none of the foregoing shall pay a rate of duty of more than.	45 per cent ad valorem.

Court and Treasury Decisions.

Cotton cloth having figures of considerable size and attractive designs produced by the swivel process with extra threads of silk, assessed for duty as etamines, was held dutiable as cloth composed of cotton and silk under paragraph 311 of the act of 1897. The construction that fabrics not wholly or substantially of cotton were excluded from the countable clauses was invoked. (G. A. 6044, T. D. 26373 of 1905.) Under the act of 1909 cloth composed in chief value of cotton but in part of silk was held dutiable under paragraph 321 notwithstanding that the amount of silk in the fabric was insignificant. But the countable provisions were held to apply to cotton cloth having a selvage containing silk which was not designed to give character to the fabric or to form a material and essential part of the woven article when utilized by the consumer. (United States *v.* Mandel, 1 Ct. Cust. Appls., 223, of 1911.)

TRACING CLOTH.

[Paragraph 254, act of 1913; paragraph 907, act of 1922.]

Summary.

For a long time England, the first and largest producer of tracing cloth, supplied the bulk of the American demand, and English brands became firmly established through years of use.

After one fruitless attempt on the part of a domestic manufacturer to produce tracing cloth of a quality to compete with the English another took up this special line af manufacture in 1911; although this company progressed to a point where it supplied about half of the domestic demand it was unable to satisfy the requirements of the more exacting customers and closed down in 1921. In 1922 the manufacture of tracing cloth was undertaken by another firm which is reported to be controlled by the leading British maker of these goods.

55032—23—1-4——3

General Information.

DESCRIPTION.

Tracing cloth is a plain woven cloth that is processed and coated to make a smooth transparent fabric, glazed on one side but dull finished on the other so as to take ink without blurring. The material of which the constituent cloth is composed is not mentioned in the tariff; some of the higher grades are of linen, but the great majority are of cotton. Tracing cloth is used by draftsmen, architects, and engineers in duplicating drawings of plans for buildings, machinery, and construction work in general. The transparent tracing cloth is placed over the original plan and the lines inked in; it is then placed over sensitized blue-print paper and exposed to sunlight, or such high-power artificial light as the arc or the mercury globe, which quickly turns the paper blue, except where covered by the inked lines on the tracing cloth, thus reproducing the plan in white on a blue ground (or in blue on a white ground, according to the type of paper used); as many prints as desired can thus be secured from one tracing. Tracing cloth is made in widths from 24 to 54 inches, the most usual widths being 30, 36, and 42 inches, with the 36-inch predominating; it is sold usually in rolls of 24 yards, but also, to a lesser extent, in sheets cut to size. Specially prepared tracing paper, although not so durable as the tracing cloth, finds considerable use as a cheaper substitute.

DOMESTIC PRODUCTION.

Materials.—The basic cloth used in the manufacture of tracing cloth is of cotton, in weight and construction equivalent to a light handkerchief lawn. It is entirely of domestic manufacture.

History of the industry.—The manufacture of tracing cloth in the United States was inaugurated about 1906, by a firm which ceased production in 1914 because of inability to manufacture successfully in competition with the English-made product. They state: "This was determined after careful investigation and comparison, and we believe the sole reason is climatic conditions being unfavorable for the manufacture of tracing cloth in this country." Another firm, which started the production of tracing cloth about 1911, discontinued in 1921; a third firm took up the manufacture of these goods in 1922.

Domestic production and consumption.—In order to avoid disclosure of the operations of an individual firm, the production of tracing cloth is not recorded by the census. It is estimated by the trade, however, that the total domestic consumption of tracing cloth is between four and five million square yards and that normally about half of this is produced in the United States and about half imported.

FOREIGN PRODUCTION.

England is the originator and main producer of tracing cloth; the English production is largely controlled by one firm which is an amalgamation of several firms manufacturing various types of filled and coated cloth. This amalgamation controls the world trade in

tracing cloth and produces practically all of that imported into the United States.

IMPORTS.

Imports of tracing cloth in the 10.9 years from August 6, 1909, to June 30, 1920, inclusive, averaged annually 2,339,565 square yards, valued at $484,414, the quantity varying from a low of 1,884,741 square yards in 1919 to a high of 3,296,255 square yards in 1917. Duties collected during the same period averaged annually $173,703, ranging from a low of $96,487 in 1915 to a high of $276,491 in 1920. The value per square yard averaged 20.71 cents, ranging from a low of 16.27 cents in 1911 to a high of 36.59 cents in 1920. On an equivalent ad valorem basis the duty averaged 35.86 per cent, ranging from 30 per cent under the 1913 tariff act to 50.80 per cent in the fiscal year 1913 under the act of 1909. On an equivalent specific basis the duty averaged 7.42 cents per square yard, ranging from 4.89 cents per square yard in 1916 to 10.98 cents per square yard in 1920. In the calendar year 1921 the quantity of imports reached a new low level, 931,528 square yards, but began to return to normal in 1922.

TARIFF HISTORY.

Tracing cloth was first mentioned in the act of 1909 (par. 321), when it was made dutiable at 5 cents per square yard and 20 per cent ad valorem. Under the act of 1913 (par. 254) tracing cloth was dutiable at 30 per cent ad valorem. The 1909 rates were restored in the act of 1922 (par. 907).

Under the act of 1890 tracing cloth was dutiable as countable cotton cloth (T. D. 15140, G. A. 2666), and as such, by reason of its construction and value, it paid ad valorem duties of 40 to 45 per cent. Under the act of 1894 it continued to be assessed as countable cotton cloth until 1895, when the Board of General Appraisers (T. D. 16227, G. A. 3106) decided that while it was possible to count the threads, it could be done only by removing the gelatinous covering, and therefore that tracing cloth was properly dutiable at 35 per cent ad valorem as a manufacture of cotton not specially provided for. Under the act of 1897 tracing cloth was assessed under the new provision for "cotton cloth filled or coated" at 3 cents a square yard and 20 per cent ad valorem. At first this provision was limited to goods in the piece, and tracing cloth cut up into pieces convenient for use was classified as a manufacture of cotton not specially provided for at 45 per cent ad valorem; in 1901 this was held to be erroneous (T. D. 23365, G. A. 5027), and the expression "or otherwise" in the definition of cotton cloth in the Dingley Act was declared to include such goods made from cotton cloth.

COMPETITIVE CONDITIONS.

The competition between imported and domestic tracing cloth has been mainly on the basis of quality. For a long time the American market was monopolized by English manufacturers who sold their goods under special trade-marked brands. These brands became so well known as a guaranty of quality that it has been very difficult to displace them with newer brands put out by a domestic manu-

facturer. A domestic firm that lasted from 1911 to 1921 finally secured nearly half of the domestic market, but though its product was, after considerable experimentation, greatly improved it was able to maintain and enlarge its standing only by persistent advertising. It experienced such keen competition from the long-established English brands of tracing cloth, as well as increasing competition from domestic tracing paper, that it gave up the struggle in 1921. A new domestic firm, established in 1922, will probably have a better chance, as its capital stock is owned by English manufacturers, and they will, presumably, supply the skill and experience necessary to produce the best qualities.

STATISTICAL TABLES.

TABLE 3.—*Tracing cloth* [1]*—Imports for consumption—Revenue.*

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per square yard.	Actual and computed ad valorem rate.	Actual and computed specific duty per square yard.
		Sq. yds.			*Cents.*	*Per cent.*	*Cents.*
1910 [2]	5 cents per square yard plus 20 per cent ad valorem.	2,065,985	$343,016	$171,902	16.60	50.11	8.32
1911	do	2,128,950	346,330	175,713	16.27	50.74	8.25
1912	do	2,189,279	361,523	181,769	16.51	50.28	8.30
1913	do	2,448,985	397,559	201,961	16.23	50.80	8.25
1914	do	371,063	60,430	30,639	16.91	33.61	5.68
	30 per cent ad valorem.	1,680,630	286,598	85,980			
1915	do	1,956,870	321,625	96,487	16.44	30.00	4.93
1916	do	2,363,682	385,086	115,526	16.29	30.00	4.89
1917	do	3,296,255	622,485	186,745	18.88	30.00	5.67
1918	do	2,595,738	632,203	189,661	24.36	30.00	7.31
1919	do	1,884,741	601,623	180,487	31.92	30.00	9.58
1920	do	2,519,080	921,637	276,491	36.59	30.00	10.98
Annual average [3]		2,339,565	484,414	173,703	20.71	35.86	7.42
July 1–Dec. 31, 1920	30 per cent ad valorem.	1,247,488	607,988	182,396	48.73	30.00	14.62
Calendar year 1921	do.[4]	[5] 931,528	413,532	124,402	44.39	30.08	13.35
Jan. 1–Sept. 21, 1922	do.[4]	[6] 1,316,778	642,704	193,102	48.81	30.05	14.66

[1] Tracing cloth was first mentioned in the act of 1909, and imports therefore not recorded prior to the fiscal year 1910.
[2] Imports from Aug. 6, 1909, to June 30, 1910, inclusive.
[3] Average for 10.9 years.
[4] Plus 7 cents a pound if containing cotton of 1⅛-inch staple or longer. (Emergency tariff act of May 27, 1921.)
[5] Includes 34,962 square yards (4,893 pounds), valued at $15,211, paying additional duty of $343 because of the 7 cents a pound surtax levied by the emergency tariff act.
[6] Includes 10,259 square yards (4,157 pounds), valued at $7,347, paying additional duty of $291 because of the 7 cents a pound surtax levied by the emergency tariff act.

The following table shows comparative prices of the principal imported and the nearest comparable domestic tracing cloths. These prices are net, after subtraction of discounts, and were obtained, May 15, 1921, from the three largest dealers in tracing cloths; each of these firms not only imports direct but also handles the domestic article and sells both wholesale and retail.

TABLE 4.—*Tracing cloth—Wholesale and retail prices (per roll of 24 linear yards).*

Firm.	Width in inches.	Imported article.			Domestic article.	
		Approximate landed cost.	Wholesale price.	Retail price.	Wholesale price.	Retail price.
A	30	.....	$14.25	$16.83	$11.26	$17.88
B	30	.....	14.25	17.65	13.15	.....
C	30	$12.75	.....	.....	15.80	17.88
A	36	.....	.....	.....	12.83	20.25
B	36	14.75	16.31	19.25	14.95	.....
C	36	.....	.....	21.46	18.00	20.25
A	42	.....	19.95	23.53	16.53	26.10
B	42	17.50	19.05	23.53	19.30	.....
C	42	.....	.....	.....	23.20	26.10
B	48	21.50	24.93	29.43	.....	.....
B	54	26.50	29.86	35.25	.....	.....
C	54	26.40	34.92	39.28	.....	.....

The finished weight of the imported article, 30 inches wide, was 6.93 yards per pound; the warp and filling yarn numbers, in the grey, were 78/1. The largest sales are made in the 36-inch width. The prices quoted in Table 4 are based on the grade known as "dull finish."

The following table shows mill prices, subject to varying discounts, quoted by the domestic manufacturer:

TABLE 4A.—*Tracing cloth—List prices* [1] *(wholesale) per roll of 24 yards.*

[From a domestic manufacturer.]

	26-inch roll.	30-inch roll.	36-inch roll.	38-inch roll.	42-inch roll.
Nov. 1, 1913	$6.40	$6.80	$7.50	.....	$10.20
Jan. 1, 1917	7.25	7.55	8.40	$10.00	11.30
June 1, 1917	8.65	9.00	10.00	12.00	13.00
Sept. 15, 1917	9.75	10.25	11.75	14.00	15.25
Apr. 1, 1918	10.25	10.75	12.25	14.50	15.75
June 13, 1918	11.50	12.00	13.50	16.00	17.50
Oct. 10, 1918	14.75	15.25	16.90	19.50	20.95
Dec. 20, 1919	17.20	17.70	20.25	23.85	26.15
May 1, 1920 [2]	22.35	23.00	26.30	31.00	34.00

[1] This list of prices was subject to discount, the discount depending on the buyer's relative position in the line of distribution from jobber to consumer and the size of his purchases.
[2] The May 1, 1920, series of prices was still in force Jan. 1, 1921.

Tracing cloth—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1909	321	* * * tracing cloth	5 cents per square yard and 20 per cent ad valorem.
1913	254	....do	30 per cent ad valorem.
1922	907	....do	5 cents per square yard and 20 per cent ad valorem.

COURT AND TREASURY DECISIONS.

See Tariff History, supra, and Cotton Cloths Filled or Coated, infra.

COTTON CLOTH FILLED OR COATED, ALL OILCLOTHS (EXCEPT SILK OILCLOTHS AND OILCLOTHS FOR FLOORS), AND COTTON WINDOW HOLLANDS.

[Paragraph 254, act of 1913; paragraph 907, act of 1922.]

SUMMARY.

The only appreciable import under the above heading is of cotton window hollands. These were formerly almost entirely imported, but within the last decade the domestic production has increased to a point where it not only supplies the bulk of the domestic demand but has built up an export trade that is, temporarily at least, as large in volume and value as that of imports.

The import of cotton oilcloths is very small and the domestic industry has for a good many years not only monopolized the domestic market but obtained a large and increasing market abroad.

GENERAL INFORMATION.

All of the cloths included in the above heading are filled or coated, and practically all are made of cotton. Tracing cloth, also a filled and coated cloth, was provided for under the act of 1913 in the same paragraph at a higher rate of duty, and this is also true of the act of 1922. Some of these filled or coated cloths, particularly oilcloths, are incidentally waterproof, but fabrics primarily waterproof are given separate mention.

DESCRIPTION.

Cotton cloth filled or coated.—A *filled cloth* is one in which all the interstices are filled flush with the top of the weave with a filler of starch or other material, the whole being smoothed down in the operation of the filling machine so as to leave the weave evident through the starch or other materials applied. The filler makes the cloth opaque, or nearly opaque, and adds to the weight and stiffness. The filling substances are varied, among them being starch, china clay, chalk, plaster of Paris, white lead, glue, glauber salts, and glucose. Typical examples of filled cloths are window hollands (specially mentioned in the tariff for reason stated below), buckram and similar cloths stiffened for padding coats, heavily sized grey shirtings, and the like.

A *coated cloth* may be more or less filled in the interstices, but the primary requisite is that the surface be coated with a plaster finish at the expense of the face. The coating materials consist of varnish, paint, pigments, etc. Typical examples of coated cloths are those used in the sign-painting trade and those used for tags, bookbinder's cloth, imitation vellum, "green cloth" (a fabric treated with a solution of copper and used in making artificial flowers), artificial leather, and the like. A coated cloth is usually but not necessarily opaque. For instance, "near glass" is a thin, transparent coated cloth, made of fine yarns in cheesecloth constructions, used for covering merchandise on the counter and for making certain styles of lamp shades. Tracing cloth, which is also transparent, is likewise a coated cloth, but in the acts of 1909 and 1913, also 1922, has been provided for eo nomine at a higher rate than that on other coated cloths.

Cotton window hollands.—Cotton window hollands are used for making roller shades for windows. They are usually plain-woven cotton sheetings (a typical fabric being 38 inches wide, with 60 by 60 ends per square inch, 18s and 20s yarns, weighing 3.24 yards per pound), which are filled to make them more or less opaque, then dyed and glazed by subjection to a beetling process. A portion is bleached instead of dyed.

Cotton window holland is only one type of window-shade cloth. Some domestic window-shade cloth, particularly the cheap 44 by 40 constructions, are finished by simply passing through colored starch. Cloth, such as the 60 by 52, 6.15-yard print cloth, which has been starched and glue sized and then painted, is known as painted shade cloth; if a different color is used on either side it is known as duplicate window shading. The cloth imported from England as "Lancaster window-blind cloth" is of this type. This cloth was held dutiable under the act of 1897 as cotton cloth filled or coated, because the painting completely closes the interstices, whereas cotton window hollands were held dutiable as countable cotton cloth because the filling and beetling did not completely fill the interstices. It was because of this decision that cotton window hollands were specifically mentioned in the act of 1909.

Oilcloths (except silk oilcloths and oilcloths for floors).—The goods so listed are almost entirely cotton oilcloths. Oilcloths are made by giving cloth a coating of solidified linseed oil, either with or without the addition of other materials, such as china clay for weighting and pigments for coloring. The cotton oilcloths are mainly lightweight sheetings which are coated and finished by printing and varnishing. One of the main classes is that known as table, shelf, or wall oilcloth. Enameled oilcloth is produced by baking the coated fabric so as to give a shiny, resistant surface.

Artificial leather.—Artificial leather, which is finding increased uses as a substitute for real leather, is produced on a foundation of cotton cloth, but the composition of the coating and the method of finishing vary widely. In the most typical system the cloth is coated with a solution of pyroxylin (nitrated cotton), castor oil, and other substances; the consistency of the solution and the number of coatings are varied in proportion to the thickness of the base and use for which the finished fabric is intended. From 4 to 16 coats are applied; the solvents used are such as evaporate quickly when exposed to heat, so that successive coats can be applied and dried with little loss of time. After a coating of the required depth is secured, metal rollers or plates are used to stamp the grain or other decorative designs on the softened coating of the fabric. Finishing processes suitable for each type of leather bring out the grain and luster. Artificial leather finds its largest use in covering seats and tops of automobiles and secondarily in upholstering furniture. It is also used for book covers, cardcases, portfolios, traveling bags, suitcases, trunks, toys, baby buggies, sporting goods, caps and leggings, children's hats, motor coats, and a great variety of other articles.

The cotton cloths used as a foundation for artificial leather are mainly sheetings, drills, sateens, and moleskins. Sheeting is used for such purposes as book coverings and linings of bags where no great degree of tensile strength is required. For covering safety razor boxes the material is of the texture of a handkerchief fabric. The

drills and twills are heavier and stronger than sheetings and used for such purposes as upholstering and automobile tops. Sateens are tough and useful where strength and hard surface are required. Moleskin is a form of sateen that is napped on one surface; because of this softness and fullness the artificial leather made on a moleskin base has a plumpness and feel that is very similar to real leather; it is largely used in making traveling bags as well as upholstery. Artificial leather is most largely made in the 50-inch width; in order to allow for shrinking in finishing, the cotton fabrics have to be slightly wider.

DOMESTIC PRODUCTION.

All of the above-mentioned finished cloths, with the exception of some of the less-used specialties, are manufactured extensively, using annually large quantities of domestic grey goods.

Materials.—The basic cotton cloths, while varying in width and weight, are made on plain looms and are produced entirely by domestic manufacturers. China clay is imported from England but the linseed oil, starch, chemicals, and pigments required are obtained locally.

Organization.—The cloth is in most instances purchased by concerns which make a specialty of the finishing by filling and coating. The window holland firms weave their own cloth. The major portion of the production of each class of filled and coated cloth is from a few well-organized large firms of ample capital. Some oilcloth manufacturers have special departments for developing export trade.

Geographical distribution.—Works for converting cotton cloth into oilcloth and artificial leather are found in New Jersey, New York, Massachusetts, Pennsylvania, Maine, Ohio, Illinois, and California. Window hollands are produced in Delaware and Rhode Island.

Domestic production.—The census does not record the total production of all types of filled or coated cotton cloths, but separately enumerates the output of oilcloths made on a cotton back and, starting in 1909, the value of artificial leather produced. Detailed figures are given in Table 5 from which it is seen that in the census years 1904, 1909, 1914, and 1919 the value of oilcloths made on a cotton back was $5,082,648, $7,904,352, $8,520,603, and $15,951,098, respectively; and the value of artificial leather produced in 1909, 1914, and 1919 was $3,448,617, $6,097,293, and $35,026,000, respectively. Between 1914 and 1919 there was a large decrease in the quantity of enameled oilcloth, which was apparently due to substitution of artificial leather in upholstery. The production of cotton window hollands is not recorded by the census but is known to be several times as large as the amount imported.

Domestic exports.—Exports of filled and coated cotton cloths are not recorded separately except in the case of cotton oilcloths. These cloths, listed as oilcloth other than oilcloths for floors, were valued at $666,684 in the fiscal year 1914 and rose to the record value of $3,618,835 in the calendar year 1920. These goods are widely distributed, the main purchasers in 1920 being the Dutch East Indies, Cuba, Argentina, Australasia, Mexico, British India, Holland, United Kingdom, Straits Settlements, and China in the order stated.

Prior to the war there was practically no export of American-made cotton window hollands, but this trade has since been developed to

a point where exports equal imports. It is stated in the trade that the domestic window holland is so much faster in color than the British that in such countries as Australia it finds ready sale at a higher price.

That there are fairly substantial and competitive exports of other types of filled and coated cotton cloths may be gathered from the fact that in the year ended March 31, 1921, Canada imported bookbinder's cloth from the United States to the value of $340,065, as against $143,598 from the United Kingdom.

IMPORTS.

Imports of the cloths grouped together in the statistics as "cotton cloth filled or coated, oilcloths (except silk oilcloths and oilcloths for floors), and cotton window hollands" were first recorded in 1910 under the tariff act of 1909. In the 10.9 years, from August 6, 1909, to June 30, 1920, inclusive, imports averaged annually 2,197,164 square yards, valued at $350,383, ranging from a high of 3,287,594 square yards, valued at $438,299, in 1913 to a low of 438,892 square yards, valued at $144,057, in 1919. The sharp decrease in rate of duty in the act of 1913 was accompanied by a slight decrease in the quantity and value of imports. The revenue collected during these 10.9 years averaged $114,182 annually, ranging from a high of $186,288 in 1913 to a low of $36,014 in 1919. For the calendar year 1921 imports were 525,644 square yards, valued at $183,972, and the duty collected $46,838.

Imports of oilcloths of the kinds so included have been very small and the main item has been cotton window hollands, although there are small imports of the aforementioned "green cloth" and "near glass," and a few others of a more or less novelty character. Bookbinder's cloth, or imitation vellum, is also included; prior to the war this was a rather consistent import, but because of increased domestic production it has declined to small proportions, and imports of such goods are now of the very finest lightweight grades, of which the consumption is not sufficient to interest the domestic manufacturer.

TARIFF HISTORY.

Cotton cloth, filled or coated, was first specifically provided for in the act of 1897 (par. 311). Enameled and other oilcloths of cotton were not included thereunder, as there was a separate provision for oilcloths of all kinds (par. 337), and cotton window hollands were excluded and classed as countable cotton cloth on the ground that the interstices were not substantially filled; in other words, that they were not entirely opaque.

In the act of 1909 (par. 321) there was inserted a provision for "Cotton cloth, filled or coated, all oilcloths (except silk oilcloths and oilcloths for floors), and cotton window hollands, 3 cents per square yard and 20 per centum ad valorem; * * *."

This provision was retained unchanged in the act of 1913 (par. 254) except that the rate of duty was made a flat 25 per cent ad valorem.

This provision was also retained in the act of 1922 (par. 907) but the rate of duty was made the same as in the act of 1909.

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COMPETITIVE CONDITIONS.

Cotton oilcloths.—The American export of cotton oilcloths was large before the war and has since increased greatly. Imports were and are very small. The basic cloths are usually fully as cheap in the United States as abroad, and judging from the great excess of exports over imports it seems evident that the large scale domestic production methods enable domestic oilcloth manufacturers to produce the finished goods at a lower price than abroad.

Cotton window hollands.—Of the cloths grouped together under the heading of this section the only one imported in any appreciable quantity is cotton window holland. Imports are mainly from one Scotch firm which has a long-established trade. This firm produces a very good grade of window hollands in white, cream, ecru, "linen," drab, and other light shades; it finishes its goods slowly and carefully with old-fashioned wooden faller beetles, which, in conjunction with the filled cloth being in a slightly damp condition when the beetling is started, permits the production of a smooth finished fabric with the interstices in the cloth substantially closed. These wooden faller beetles strike the cloth in the roll at the rate of about 50 to 56 strokes a minute.

One domestic manufacturer uses wooden faller beetles and produces mainly the light shades such as are imported. Another beetles with steel hammers, operated a great deal faster, about 350 strokes a minute, and produces for the most part green or blue shades of a good depth. He piece-dyes with mineral colors, the particles of which are very finely divided, and uses gums to assist suspension in the dye bath. These mineral-dyed goods are much faster to sunlight than any goods produced abroad, so much so that there has been built up an export trade with British possessions, a trade now fully as large as, if not larger than, the import trade.

Cotton window hollands are made from ordinary grey sheeting, averaging around 20s yarns, and such cloth is usually as cheap in the United States as in the United Kingdom. Although relative finishing costs are not known it would seem, judging from prices of the finished goods, that the domestic costs are now as low as, if not lower than, the foreign.

Both imports and exports appear to be on the basis of quality rather than price. Scotch window hollands, of the lighter shades mainly, sell in the United States largely on the basis of established reputation. American window hollands, mainly of the deeper-dyed shades, sell in Australasia because the colors are faster than those offered by the United Kingdom.

STATISTICAL TABLES.

TABLE 5.—*Cotton-back oilcloths and artificial leather—Production in United States.*

[From Federal Census.]

	1904	1909	1914	1919	1921
Oilcloths (made on cotton back):					
Enameled—					
Square yards	11,574,986	17,338,440	18,357,097	8,460,738	[1] 3,007,000
Value	$1,542,467	$2,265,146	$2,495,255	$3,421,188	[1] $1,015,000
Table, wall, shelf, and stair—					
Square yards	38,026,083	61,168,777	59,358,872	39,132,641	[1] 64,196,000
Value	$3,540,181	$5,639,206	$6,025,348	$12,529,910	[1] $14,389,000
Artificial leather:					
Square yards	[2]	[5] 11,869,875	[3]	[3]	[4]
Value	[2]	[5] $3,448,617	[6] $6,097,293	$35,025,714	$15,589,000

[1] Includes oilcloth made by one establishment engaged in manufacturing other products of chief value.
[2] Not recorded.
[3] The practice of the Bureau of the Census is to classify mills according to the predominant product. In the 1919 census, artificial leather was recorded to the extent of 13,632,501 square yards, valued at $8,743,748, under the general classification of "Oilcloth and linoleum," and to the value of $26,281,966, quantity not stated, under the general classification of "Upholstering materials not elsewhere specified." The total value of the artificial leather produced in 1919 was therefore $35,025,714, but the total quantity corresponding thereto was not recorded.
[4] In the 1921 census, artificial leather was recorded to the extent of 283,000 square yards, valued at $73,000, under the general classification of "Oilcloth and linoleum," and to the value of $15,516,000, quantity not stated, under the general classification of "Upholstering materials not elsewhere specified." The total value of the artificial leather produced in 1921 was therefore $15,589,000, but the total quantity corresponding thereto was not recorded. The great bulk of the so-called artificial leathers is made with pyroxylin coatings in establishments devoted primarily or exclusively to their manufacture, and only a minor portion is made, partly with pyroxylin and partly with linseed oil coatings, in establishments devoted primarily to oilcloths.
[5] Shown on page 200, Table 9, of Volume X of 1910 census; apparently total of all artificial leather produced in 1909.
[6] Recorded as "imitation leather, leatheroid," under general heading of "Upholstering materials, not elsewhere specified." This is apparently not the complete total for all artificial leather produced, as there is no record of that produced in establishments engaged primarily in the manufacture of "Oilcloth and linoleum."

TABLE 6.—*Cotton cloth filled or coated, all oilcloths (except silk oilcloths and oilcloths for floors), and cotton window hollands—Imports for consumption—Revenue.*

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per square yard.	Actual and computed ad valorem rate.	Actual and computed specific duty per square yard.
		Sq. yds.			*Cents.*	*Per cent.*	*Cents.*
1910 [1]	3 cents per square yard and 20 per cent.	2,907,238	$409,459	$169,109	14.08	41.30	5.82
1911	do	3,149,089	423,702	179,213	13.45	42.30	5.69
1912	do	2,694,279	365,287	153,886	13.56	42.13	5.71
1913	do	3,287,594	438,299	186,288	13.33	42.50	5.67
1914	do	453,544	62,649	26,136	13.81	41.72	5.76
1914	25 per cent ad valorem.	2,564,507	358,126	89,532	13.96	25.00	3.49
1915	do	2,344,482	313,123	78,281	13.36	25.00	3.34
1916	do	2,154,245	329,404	82,351	15.29	25.00	3.82
1917	do	1,962,325	351,791	87,948	17.93	25.00	4.48
1918	do	1,066,563	279,401	69,850	26.20	25.00	6.55
1919	do	438,892	144,057	36,014	32.82	25.00	8.21
1920	do	926,334	343,889	85,972	37.12	25.00	9.28
Annual average [2]		2,197,164	350,383	114,182	15.95	32.59	5.20
July 1–Dec. 31, 1920	25 per cent ad valorem.	337,360	135,703	33,926	40.22	25.00	10.06
Calendar year 1921	do [3]	[4] 525,644	183,972	46,838	35.00	25.46	8.91
Jan. 1 to Sept. 21, 1922	do [3]	[5] 415,395	139,623	34,911	33.61	25.00	8.40

[1] Period from Aug. 6, 1909, to June 30, 1910.
[2] Average for 10.9 years.
[3] Plus 7 cents a pound if containing cotton of 1⅛-inch staple or longer. (Emergency tariff act of May 27, 1921.)
[4] Includes 33,267 square yards (12,071 pounds), valued at $12,112, paying additional duty of $845 because of the 7 cents a pound surtax levied by the emergency tariff act.
[5] Includes 1,056 square yards (70 pounds), valued at $211, paying additional duty of $5 because of the 7 cents a pound surtax levied by the emergency tariff act.

TABLE 7.—*Oilcloths, excluding those for floors—Domestic exports (fiscal years).*

Exported to—	1910	1911	1912	1913	1914	1915
Netherlands	$15,842	$9,143	$16,996	$15,165	$15,977	$14,962
United Kingdom	9,259	17,441	54,808	100,243	122,650	103,972
Canada	69,702	79,156	99,606	105,081	107,785	71,448
Mexico	35,658	49,995	55,477	60,167	19,344	14,719
Cuba	19,111	10,754	23,801	53,867	57,110	54,264
Argentina	20,121	5,242	5,999	15,882	32,443	21,946
Chile	.....	64	496	1,467	9,855	4,083
China	897	1,182	571	6,269	1,851	250
East Indies	43,187	38,635	122,383	228,924	81,765	147,229
Australia and Tasmania	18,738	29,596	16,190	24,050	40,565	30,809
Philippine Islands	33,460	28,750	28,739	14,653	43,684	27,034
All other countries	87,569	86,803	116,370	108,211	133,655	95,698
Total	353,544	356,761	541,436	733,979	666,684	586,414

Exported to—	1916	1917	1918	1919	1920	1921 [1]
Netherlands	$24,882	$54,621	.....	$25,681	$203,807	$134,067
United Kingdom	190,132	14,975	$12,821	63,764	112,221	120,003
Canada	87,495	81,499	106,961	126,077	108,640	50,409
Mexico	14,504	38,746	74,573	87,907	160,065	181,782
Cuba	95,613	70,987	143,713	85,504	248,919	47,863
Argentina	43,200	104,567	106,631	124,284	154,087	166,995
Chile	20,550	37,438	94,554	102,982	33,614	39,070
China	10,437	31,767	48,152	27,377	104,829	70,104
East Indies	383,843	173,732	71,491	169,536	399,200	194,563
Australia and Tasmania	71,367	143,976	169,979	417,727	100,777	107,842
Philippine Islands	38,951	51,703	139,311	51,644	12,428	27,278
All other countries	191,626	318,525	309,591	510,240	837,112	391,571
Total	1,172,600	1,122,536	1,277,777	1,792,723	2,475,699	1,531,547

[1] Calendar year.

Cotton cloth filled or coated, all oilcloths (except silk oilcloths and oilcloths for floors), and cotton window hollands—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1883	340	* * * all other oilcloth (except silk oilcloth), * * *	40 per cent ad valorem.
1890	369	* * * all other oilcloth (except silk oilcloth), * * * not specially provided for in this act, valued at 25 cents or less per square yard.	Do.
		Valued above 25 cents per square yard.....	15 cents per square yard and 30 per cent ad valorem.
1894	273	* * * all other oilcloth (except silk oilcloth), * * * not specially provided for in this act, valued at 25 cents or less per square yard.	25 per cent ad valorem.
		Valued above 25 cents or less per square yard.....	40 per cent ad valorem.
1897	311	* * * Cotton cloth, filled or coated.....	3 cents per square yard and 20 per cent ad valorem.
1897	337	* * * and all other oilcloth (except silk oilcloth) under 12 feet in width not specially provided for herein.	8 cents per square yard and 15 per cent ad valorem.
1909	321	* * * Cotton cloth filled or coated, all oilcloths (except silk oilcloths and oilcloths for floors), and cotton window hollands.	3 cents per square yard and 20 per cent ad valorem.
1913	254	* * * cotton cloth filled or coated, all oilcloth (except silk oilcloths and oilcloths for floors), and cotton window hollands.	25 per cent ad valorem.
1922	907	* * * cotton window hollands, all oilcloths (except silk oilcloths and oilcloths for floors), and filled or coated cotton cloths not specially provided for.	3 cents per square yard and 20 per cent ad valorem.

COURT AND TREASURY DECISIONS.

The word "filled" as used in paragraph 311 of the act of 1897 was declared to be a manufacturing rather than a commercial term, and not to be confined in its meaning to such goods as were weighted with a foreign substance, usually an inorganic material, to give them a fictitious solidity, in which sense it was formerly used in England; the filling might be starch alone. It was furthermore declared, however, that whatever substance was used to constitute cotton cloth filled, such quantity must be used as substantially to close the interstices and make a plain surface. Scotch hollands or kings

hollands used for window shades and stiffened with 20 per cent in weight of starch which did not substantially close the interstices, were held to come within the countable cotton cloth clauses (United States *v.* Pinney, 105 Fed., 934 of 1900). Cotton cloth which had been subjected to several coats of paint until the interstices were completely filled, giving it an appearance somewhat similar to oilcloth, and known in trade as Lancaster window blind cloth, was held to be cotton cloth filled or coated under paragraph 321 of the act of 1909 (Shallus *v.* United States, 1 Ct. Cust. Appls., 556 of 1911), as was also woven cotton cloth coated with an artificial silk flock, the artificial silk constituting the material of chief value. The manner in which the flock was attached by a binding to the surface of the fabric was declared to make a coating only, since the artificial silk did not enter into the real web of the goods but might easily be scraped from the surface without otherwise affecting the structure of the fabric (Knauth *v.* United States, 2 Ct. Cust. Appls., 479 of 1912).

But window curtains cut in lengths of 6 feet from cotton hollands and hemmed and ready for the sticks to be inserted were held to be excluded from paragraph 321 of the act of 1909 because the goods were not fabrics or piece goods within the intended scope of the words "cotton window hollands" and, furthermore, excluded from the countable provisions because of being partly completed window curtains, and therefore "an article, finished or unfinished, made from cotton cloth," within paragraph 332 (United States *v.* Anderson, 3 Ct. Cust. Appls., 191 of 1912). So-called green cloth, treated with a solution of copper and wax, was held dutiable under the provision for cotton cloth filled or coated in the act of 1913 (T. D. 34062 of 1914), as was green cloth which had been apparently treated or coated with some substance which made it smooth and slightly stiff. (Abstract 37257 of 1915.)

WATERPROOF CLOTH OF COTTON OR OTHER VEGETABLE FIBER.

[Paragraph 254, act of 1913; paragraph 907, act of 1922.]

SUMMARY.

The production of waterproof cloths in the United States is large and constantly increasing. There are no data as to the extent of this output, but it is known to run into millions of dollars.

Imports of waterproof cloth are negligible, averaging during the 1911–1920 (fiscal year) decade only $84,235 annually, and for the calendar year 1921 only $77,892, as shown in Table 8. Imports are confined mainly to special types on which there is not sufficient demand to attract the domestic manufacturer. The most consistent item in this small trade consists of a heavy cloth, used mainly for automobile tops, sides, and seat covers, that is not processed in any way but which gains its waterproof quality from the close weaving of coarse yarns.

GENERAL INFORMATION.

DESCRIPTION.

Waterproof cloths under paragraph 254 of the act of 1913 and paragraph 907 of the act of 1922 include all made of cotton or other vegetable fiber, with or without the addition of india rubber, not otherwise specially mentioned.

Waterproof cloths are used for many purposes and include types used for raincoats, auto tops, dress shields, infants' wear, and hospital use. Any cloth which is impervious to water, or nearly so, and intended to turn water might be classed as a waterproof cloth. Some fabrics invoiced as waterproof cloths and held to be so dutiable are simply close-woven cotton cloths which have undergone no special treatment, and others are made by cementing together two cloths (such as the duplex fabric made of a printed cloth and a dyed cloth and used for raincoats) that are otherwise not waterproof. The majority of waterproof cloths have, however, been subjected to special finishing processes, the nature and extent of which are dependent on the service expected of the particular goods.

DOMESTIC PRODUCTION.

The great bulk of the waterproof cloths used in the United States are of domestic manufacture and finish. There are no figures as to the exact extent of the domestic industry, but it is known to be large and increasing. Imports are relatively negligible.

Materials.—Aside from the basic cotton cloths, practically all of which are of domestic manufacture, the waterproofing industry uses various chemicals, salts, oils, fats, wax, paraffin, and rubber. Linen, instead of cotton, cloth is used as the foundation material in some cases.

Equipment.—The majority of the domestic production is from large and well-equipped plants. Most of the large rubber companies finish quantities of this material, which they sell in the finished garment.

Methods of production.—The methods [4] of preparing fabrics in order to make them water-resistant are:

1. Impregnation with metallic salts.
2. Coating with oils, fats, and wax.
3. Coating with solutions of rubber.
4. Superficial solution by means of Schweitzer's reagent.

The first method finds application in the dressing of sailcloth and other heavy fabrics. The material is impregnated with alum and acetate of lime, and is then entered into a fixing bath containing waterglass. For some classes of goods the latter bath consists of a soap solution, in which case an insoluble aluminum or lime soap is formed in the fabric.

The second method is used for rain cloths, sign cloths, imitation leather, and the like. The fabric is passed between hot rollers and then over a block of wax. By another method the wax is dissolved in benzine and the fabric padded with this solution. As the latter method is much more expensive, it is generally limited to ladies' high-class dress goods.

In the third method the rubber is dissolved in carbon disulphide, chloroform, or the like. The goods may be either coated or padded with the solution. Gossamer cloth, mackintosh cloth, bathing caps, dress shields, infants' wear, etc., are examples of this class of fabric.

The fourth method has found application in the manufacture of bookbinders' cloth. It consists in passing cotton cloth through an ammoniacal solution of cupric oxide, which dissolves the cotton on the surface to a slight extent. A passage between hot rollers completes the operation.

[4] This classification is given in an article printed in Posselt's Textile Journal of August, 1920.

Geographical distribution.—Judging from establishments listed as engaged in this trade, the waterproofing of cotton cloths is carried on largely in New York, Massachusetts, Connecticut, Delaware, and Ohio.

Domestic production.—The production of waterproof cloths in the United States is large and constantly increasing. There are no data as to the extent of this output, but it is known to run into millions of dollars.

IMPORTS.

Imports of waterproof cloth of cotton or other vegetable fiber were first enumerated, separately from waterproof cloths in general, in the fiscal year 1898. In the 23 years, 1898–1920, imports of waterproof cloth of cotton or other vegetable fiber averaged annually 123,290 square yards, valued at $50,671, with a record import of 347,230 square yards, valued at $115,292, in 1910. The revenue received during these 23 years averaged $17,023, with a record of $57,781 in 1910.

It may be noted that the average value per square yard of imported waterproof cloth is very high, almost twice that of countable cotton cloths, and only exceeded by that of cotton pile fabrics. During the 23 years for which records are available, imports of waterproof cloth of cotton or other vegetable fiber averaged 41.10 cents per square yard, varying from a low of 31.57 cents in 1911 to a high of 73.91 cents in 1919. For the calendar year 1921 there were imported 107,921 square yards, valued at $77,892, the value per square yard being 72.18 cents, and the duty collected $19,602.

The equivalent ad valorem rates of duty have varied from 25 per cent under the 1913 act to 51.67 per cent in 1911, with a 23-year average of 33.59 per cent. The equivalent specific duty has varied from 6.74 cents in 1914 to 18.48 cents in 1919, with a 23-year average of 13.81 cents per square yard. During the calendar year 1921 the equivalent specific duty was 18.16 cents per square yard.

The bulk of the small imports of waterproof cloth of cotton or other vegetable fiber gain their water-resisting qualities by very close weaving and have not been subjected to any waterproofing process. These imports are usually in small quantities of any one type, as they are designed for special purposes. The most consistent and largest import of this type is a heavy canvas-like fabric, plain woven, of dyed or bleached yarns, largely in mixtures of tan shades and white or plain colors. It is used for automobile tops, sides, and seat covers. While some fabrics of this type are produced in the domestic industry, the variety imported is of the highest quality and has never been used in sufficient quantities to attract the domestic manufacturer. The recent and more general use of closed cars has tended to further reduce the demand for these fabrics and, aside from imported cars, their use is confined mainly to special cars, so-called "sport models," of the highest grade.

While the bulk of the imports of waterproof cloths of cotton or other vegetable fiber consist of the above-mentioned unprocessed auto-top cloth, there are from time to time smaller imports of various processed cloths, with or without india rubber.

TARIFF HISTORY.

"Waterproof cloth" has been given specific mention in tariff acts for more than half a century. In the act of 1897 (par. 337) the eo nomine provision was limited to "waterproof cloth, composed of cotton or other vegetable fiber, whether composed in part of india

rubber or otherwise, 10 cents per square yard and 20 per cent ad valorem." This provision remained the same in the act of 1909 (par. 347). In the act of 1913 (par. 254) it was changed to "waterproof cloth composed of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value or of cotton or other vegetable fiber and india rubber, 25 per cent ad valorem." In the act of 1922 the wording was simplified to "waterproof cloth composed wholly or in chief value of cotton or other vegetable fiber, whether or not in part of india rubber," and the duty was made compound at 5 cents per square yard and 30 per cent ad valorem.

TARIFF CONSIDERATIONS.

The necessity of a separate tariff provision for "waterproof cloth of cotton or other vegetable fiber" is doubtful, since the small imports are mainly of an unprocessed cloth that should logically be dutiable under the progressive rates of duty applied to other countable cotton cloths. It should be noted that oilcloth and various other coated or filled cloths are incidentally waterproof by reason of such coating or filling

STATISTICAL TABLES.

TABLE 8.—*Waterproof cloth of cotton or other vegetable fiber—Imports for consumption—Revenue.*

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.	Actual and computed specific duty per square yard.
		Sq. yds.			*Cents.*	*Per cent.*	*Cents.*
1898[1]	10 cents per square yard plus 20 per cent.	3,754	$1,357	$647	36.15	47.68	17.23
1899	do	3,310	1,177	567	35.56	48.17	17.13
1900	do	9,876	3,402	1,668	34.45	49.03	16.89
1901	do	3,631	1,397	642	38.47	45.96	17.68
1902	do	2,615	1,042	469	39.85	45.01	17.93
1903	do	9,759	3,754	1,727	38.47	46.00	17.70
1904	do	10,399	3,335	1,707	32.07	51.18	16.42
1905	do	27,647	10,901	4,945	39.43	45.36	17.89
1906	do	36,206	12,524	6,125	34.59	48.91	16.92
1907	do	64,086	25,621	11,532	39.98	45.01	17.99
1908	do	92,459	35,786	16,403	38.70	45.84	17.74
1909	do	167,001	58,749	28,450	35.18	48.43	17.04
1910	do	347,230	115,292	57,781	33.20	50.12	16.64
1911	do	206,318	65,137	33,659	31.57	51.67	16.31
1912	do	134,358	43,965	22,229	32.72	50.56	16.54
1913	do	148,098	48,026	24,475	32.30	50.96	16.46
1914	do	24,977	8,786	3,689	35.18	41.99	14.77
1914	25 per cent ad valorem.	[2] 233,230	79,641	13,717	34.15	17.22	5.88
1915	do	[3] 255,867	93,264	23,025	36.37	25.00	9.09
1916	do	202,230	79,944	19,986	39.53	25.00	9.88
1917	do	258,257	105,507	26,377	40.85	25.00	10.21
1918	do	323,416	178,967	44,742	55.34	25.00	13.83
1919	do	132,359	97,822	24,455	73.91	25.00	18.48
1920	do	137,986	90,041	22,510	65.25	25.00	16.31
Annual average		123,290	50,671	17,023	41.10	33.59	13.81
July 1–Dec. 31, 1920	25 per cent ad valorem.	68,812	60,608	15,152	88.08	25.00	22.02
Calendar year 1921	do[4]	[5] 107,921	77,892	19,602	72.18	25.17	18.16
Jan. 1–Sept. 21, 1922	do[4]	[6] 80,605	49,073	12,322	60.88	25.11	15.29

[1] Prior to 1898 there was no statistical enumeration of waterproof cloth of cotton or other vegetable fiber separate from waterproof cloths in general.

[2] Includes 69,779 square yards, valued at $26,069, imported free of duty under section 4 of act of 1913.

[3] Includes 2,651 square yards, valued at $1,160, in 1915, imported free of duty under section 4 of act of 1913.

[4] Plus 7 cents a pound if containing cotton of 1⅛-inch staple or longer. (Emergency tariff act of May 27, 1921.)

[5] Includes 9,337 square yards (1,855 pounds), valued at $4,957, paying additional duty of $130 because of the 7 cents a pound surtax levied by the emergency tariff act.

[6] Includes 2,646 square yards (769 pounds), valued at $1,545, paying additional duty of $54 because of the 7 cents a pound surtax levied by the emergency tariff act.

Waterproof cloth of cotton or other vegetable fiber—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1883	340	* * * waterproof cloth, not otherwise provided for	40 per cent ad valorem.
1890	369	* * * and waterproof cloth, not specially provided for in this act:	
		Valued at 25 cents or less per square yard	Do.
		Valued above 25 cents per square yard	15 cents per square yard and 30 per cent ad valorem.
1894	273	* * * and waterproof cloth, not specially provided for in this act:	
		Valued at 25 cents or less per square yard	25 per cent ad valorem.
		Valued above 25 cents per square yard	40 per cent ad valorem.
1897	337	* * * waterproof cloth, composed of cotton or other vegetable fiber, whether composed in part of india-rubber or otherwise.	10 cents per square yard and 20 per cent ad valorem.
1909	347	* * * waterproof cloth composed of cotton or other vegetable fiber, whether composed in part of india-rubber or otherwise.	Do.
1913	254	* * * waterproof cloth composed of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value or of cotton or other vegetable fiber and india-rubber.	25 per cent ad valorem.
1922	907	* * * waterproof cloth composed wholly or in chief value of cotton or other vegetable fiber, whether or not in part of india-rubber.	5 cents per square yard and 30 per cent ad valorem.

Court and Treasury Decisions.

The term "waterproof cloth" has been interpreted to be cloth which is practically waterproof (Abstract 25485, T. D. 31568, of 1911, following United States *v.* Brown, 136 Fed., 550, so classifying cravenette). A cloth coated with india rubber, which was known as jaconette sheeting, and which upon testing withstood water from running through it for a period of more than three hours, was held by the Board of General Appraisers to be dutiable as waterproof cloth. In other cases waterproof cloth has been declared to be cloth impervious to water or nearly so (Abstract 27706, T. D. 32224, of 1912, holding cloths which when formed into a sack do not prevent water from seeping through are not waterproof; and United States *v.* Walker, 5 Ct. Cust. Appls., 215, of 1914, holding that cloth having on one side the appearance of velvet and on the other side a smooth rubberlike appearance and feel come within paragraph 347 of the act of 1909 as waterproof cloth; and cases therein cited).

The provision in the acts of 1897 (par. 337) and 1909 (par. 347) for "waterproof cloth composed of cotton or other vegetable fiber, whether composed in part of india rubber or otherwise," was construed to mean "whether composed in part of india rubber or not" and not as relating to other materials than india rubber (Gartner *v.* United States, 154 Fed., 957, of 1907; United States *v.* Vandegrift, 4 Ct. Cust. Appls., 226, of 1913). The 1909 provision was held not to include waterproof cloth in chief value of india rubber (Kenyon Co. *v.* United States, 4 Ct. Cust. Appls., 344, of 1913). This decision led to the change in paragraph 254 of the act of 1913:

Waterproof cloth composed of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value or of cotton or other vegetable fiber and india rubber.

COTTON PILE FABRICS, AND MANUFACTURES THEREOF.

[Paragraph 257, act of 1913; paragraph 910, act of 1922.]

SUMMARY.

Cotton pile fabrics may be divided into two broad classes: (1) Velveteen, corduroy, velvet, and plush, and (2) Turkish toweling and other terry woven fabrics. The production of both classes of fabrics has been steadily increasing in the United States.

Imports of cotton pile fabrics have fluctuated, but as a whole have tended to decrease during the past 20 years and to form a smaller and smaller proportion of the domestic consumption. Imports are mainly of velveteen of a superior quality, mainly hand-cut goods, and smaller quantities of plush specialties. As the domestic industry increases in skill as well as in output, the market for foreign goods is becoming more and more restricted. Competition is more largely on quality than price.

GENERAL INFORMATION.

DESCRIPTION AND METHODS OF MANUFACTURE.

Cotton pile fabrics constitute the leading class of cotton cloths provided for eo nomine.

Pile fabrics consist of a foundation cloth covered in whole or in part by short projecting ends or loops made with an extra set of threads. Technically, pile fabrics are divided according to method of construction into two classes: (1) Filling piles, such as velveteen and corduroy, and (2) warp piles, such as velvet, plush, and Turkish toweling. In all cases the foundation fabric requires its own set of warp and of filling threads, and the pile, whether warp or filling, is made from an additional set of threads. Filling pile is always cut, whereas warp pile may be either cut or loop (uncut).

In filling-pile fabrics the warp and one filling is used to produce the ground, which may be either plain woven or twilled, whereas the extra or pile filling is floated loosely over the surface and bound into the ground at regular intervals to form longitudinal lines or races. These floats are afterwards cut near their center and brushed up to make a pile covering the surface. Velveteens, also known as velverets, are woven so that the cut pile covers the ground uniformly, whereas corduroys are woven so that the cut pile forms ribs or "cords."[5] Velveteens run from 19 to 36 inches in width, the narrower widths being woven two or more in a loom and having split selvages. For dress and trimming purposes, velveteens are piece-dyed in solid colors. For upholstery purposes the piece-dyed goods may be printed, embossed, or stamped with designs from a heated iron cylinder. Panel and stripe patterns are also made by cutting a raised figure on an uncut ground or vice versa, painting by hand, or burning by the pyrogravure process where the operator uses a pantograph-guided platinum stylus heated to redness to burn out the pile according to the pattern desired. In addition to ordinary dress and upholstery purposes, velveteen is used for handbags and shoe tops, and for lining fine jewelry and silverware boxes.

[5] Velveteens can be made by special cutting to look like corduroys. These are termed "hollow-cut velveteens."

Corduroys are velveteen cords, which are produced by binding the filling-pile floats into the foundation fabric in straight lines with intervals so that when cut they form ribs or cords running lengthwise of the fabric. These ribs may be of different sizes and have round or flat tops. The finer varieties of corduroys, usually made in fine yarns with a plain back, are used for children's clothing and dress fabrics. Corduroys made of coarser yarns, usually with a twill back, are noted for their exceptional wearing qualities and are used for riding trousers and skirts, and for suits of men engaged in rough labor and field sports. These goods are usually woven to finish, after piece-dyeing, in 27 to 30-inch widths. Some velveteen cords are used for upholstery, being printed, after dyeing, in elaborate floral designs.

Velveteens and corduroys come from the loom as unbleached, uncut fabrics, and have to undergo a variety of processes before they are ready for sale. Prior to the cutting operation a thin coating of lime paste is applied to the face and dried, the cloth then passed through a brushing machine which loosens the filling floats so the knife can readily pass underneath, and then back-starched, so that the filling-pile threads will not be pulled out in the operation of cutting, and again dried. The floats are then cut, usually by machinery which employs either a blade or disk (circular) cutter. Hand cutting gives better results than machine cutting but is more laborious and expensive.

In hand cutting the operator uses a special knife equipped with a guide and cuts the races, or longitudinal series of floats, one after the other, as he walks up and down beside a long table upon which the cloth is stretched.[6] On the completion of the cutting operation the stiffening substances previously applied are removed by scouring and the cloth dried. Any holes made during the cutting are repaired. The pile is then brushed up and rubbed, superfluous fibers removed by shearing or singeing, and the cloth subjected to the dyeing process, after which it is again dried, brushed, and rubbed. The operations subsequent to weaving constitute a large proportion of the total cost of manufacture.

Velveteens and corduroys are rather difficult fabrics to produce successfully and require a large proportion of skilled labor. The slightest defect in weaving will show in the finished article, and many goods are spoiled after leaving the loom, so that the percentage of seconds is unusually large. These goods are woven with a comparatively small number of ends, say 40 to 88 to the inch, but have an excessive number of picks, say 150 to 600 to the inch. Because of this high pickage the rate of production is extremely slow, also the looms have to be extra strong, and the warp held under great tension.

Velveteens, as a rule, cost more and involve a higher percentage of labor than corduroys. Velveteens are made of finer yarns, weave

[6] Corduroys are always machine cut, and the hand cutting of velveteens has practically been eliminated in this country. Machine cutting also predominates abroad, but is not general as in this country, and many of the better grades of velveteens imported are hand cut. The superiority in appearance of these hand-cut foreign fabrics is one of the main reasons for their continued import.

slower, are more expensive to cut, and the finishing requires more work and care.[7]

Cotton plush is usually woven as a double-pile fabric. In this case there are woven on each loom simultaneously two cloths, one above the other, which are connected by the alternate interlacing of the warp-pile threads. A knife traveling automatically from side to side of the loom severs the warp-pile threads halfway between the two foundation fabrics and leaves each fabric with its own cut pile. Velvet is technically similar to plush except that the pile is shorter and denser. There is very little cotton velvet made, however, and goods sold under this name are usually velveteens, which are called "cotton velvets" to distinguish them from the "velvets" of silk, which are true warp piles.[8] In the same way the terms "cotton plush" or "weft plush" are sometimes applied to velveteens with an extra long pile. Cotton warp piles are rarely woven over wires, as this method of manufacture is too expensive for any but silk velvets woven in countries having cheap labor.

Turkish toweling is a terry (loop) cloth, made with warp pile, that is woven by a method different from any of the foregoing. It is made on looms with a special reed motion and warp easing arrangement, so that a certain number of picks are first inserted and only partially beaten up, and then all of the picks together beaten up over the intervening distance to the fell of the cloth; the filling picks slide on the tight ground warp and hold and carry with them the slack pile warp which is thereby caused to form loops on one or both sides of the cloth.

Paragraph 257 of the act of 1913 covered all cotton pile fabrics in the piece, also manufactures thereof, with the exception of wearing apparel, articles of cotton chenille, and towels, bath mats, polishing cloths, and wash rags, all of which were specially provided for elsewhere. The imports recorded under the head of manufactures of cotton pile fabrics were negligible in amount, consisting of more or less sporadic imports of portieres and miscellaneous articles. Paragraph 910 of the act of 1922 covers all cotton-pile fabrics in the piece, and all manufactures thereof with the exception of wearing apparel. Because of the inclusion of articles of cotton chenille, Turkish towels, etc., the record of imports under the head of manufactures of cotton pile fabrics will doubtless be somewhat increased under the act of 1922.

DOMESTIC PRODUCTION.

The domestic production of pile fabrics has been increasing steadily in quantity and in range of varieties. The output of cotton vel-

[7] One domestic manufacturer states: "Varying with the width of the cloth and the speed of the loom, a weaver can take care of from 6 to 8 looms on velveteen and from 6 to 18 looms on corduroy. For the same width of loom the speed will be the same in each case, and the rapidity with which the cloths are woven will depend on the relative number of picks to the inch. From 75 to 85 per cent of the theoretical production is usually obtained. The percentage of seconds, shorts, remnants, irregulars, and "pounds" will vary from a maximum of 30 per cent and command a market at from 20 to 50 per cent reduction on the price of firsts according to classification." Another domestic manufacturer states: "One weaver can run 12 automatic looms on velveteens and 16 on corduroys; the speed of the loom is about 150 picks per minute. The production obtained and the percentage of seconds vary considerably in different mills. In all cases, however, the amount of velveteen seconds is much larger than corduroys." A third manufacturer states: "Average looms to a weaver, 12 to 16. Speed of loom, 150. Per cent of theoretical production usually obtained, conservatively, 80 per cent. Usual per cent of seconds, 10."

[8] One manufacturer states: "We understand that the trade designation of velveteen was adopted in this country owing to the existence of statutory prohibition in several States of the use of the word 'velvet' in connection with any pile fabric not made of silk." Another manufacturer states: "English 'cotton velvets' are filling pile fabrics which would be known in this country as 'velveteens.' In the last few years there has been developed in this country a real 'cotton velvet' that is woven just like a silk velvet, but with mercerized cotton yarns substituted for silk. A small amount of business is done on this cloth."

veteen, corduroy, velvet, and plush amounted to 29,128,703 square yards, valued at $8,540,143 in 1914, and to 40,183,780 square yards (26,175,547 pounds), valued at $36,673,551, in 1919. The output of Turkish toweling and other terry woven fabrics, which in 1919 was not separately recorded, amounted in 1919 to 31,948,062 square yards (17,444,220 pounds), valued at $14,477,643.

Equipment.—The weaving, cutting, and finishing processes require special machinery. All of the machinery required is obtainable in this country, although a small amount is still imported because of special design or because of individual preferences.

Organization.—The majority of the domestic mills producing pile fabrics of cotton are self-contained, buying cotton and turning out the finished fabric ready for use. A few follow the predominant European practice of buying their yarns and of having the goods finished outside. Many of the domestic mills produce other fabrics in addition to pile fabrics.

Geographical distribution.—The production of cotton velveteens, corduroys, and plushes is carried on extensively in Pennsylvania, Rhode Island, Massachusetts, New York, Connecticut, and Tennessee. Toweling and terry weaves are produced largely in North Carolina, Georgia, Pennsylvania, New Hampshire, Massachusetts, and New York.

Domestic exports.—The export trade in cotton pile fabrics is not separately recorded, being included in the figures for "all other manufactures of cotton." Judging from such partial figures as are obtainable from the import records of other countries, it would seem that in the period since the war domestic exports have exceeded imports. An indication is afforded by the Canadian records of imports; for the fiscal year ended March 31, 1922, they showed imports from the United States of cotton velvets, velveteens, and plush fabrics, not otherwise provided for, to the extent of 412,393 yards, valued at $419,054. Canada also imported from the United States, in the same year, cotton towels and toweling valued at $374,454, but the record does not indicate how much of this was terry woven.

INTERNATIONAL TRADE.

International trade in cotton pile fabrics was, prior to the war, supplied mainly by shipments from the United Kingdom, Germany, and France, with smaller amounts from Austria, but practically none from other countries. The largest pre-war importers were Russia and China, followed by the United States, Germany, Austria, Italy, Canada, and France. Oldham, in England, was and probably continues to be the largest center of manufacture. Crefeld, in Germany, was the most important continental center for the dyeing and finishing of cotton as well as of silk pile fabrics.

Since 1915 international trade in cotton pile fabrics has been supplied mainly by the United Kingdom and the United States.

IMPORTS.

With the continued development of the domestic industry the field for foreign pile fabrics has become narrowed down mainly to those of exceptional high grade and to specialties.

The United Kingdom has always been the main source of imports of cotton pile fabrics, but for several years prior to the war its supremacy was being threatened by increasing shipments from Germany. The small French trade was also increasing, but with the exception of small amounts from Austria there were practically no imports from other countries. During the World War imports were almost exclusively from the United Kingdom. It continues to be the main source, although imports have been resumed from France and Germany.

During the 30 fiscal years 1891–1920, inclusive, covering five tariff acts, imports for consumption of cotton pile fabrics averaged 5,250,351 square yards, valued at $1,815,449. The record import consisted of 15,917,514 square yards, valued at $4,181,038, in 1897. In the calendar year 1921 imports dropped to a new low level of 210,954 square yards, valued at $270,788.

The largest amount of revenue, $1,920,411, was collected in 1897, and the least, $109,522, in the calendar year 1921. The equivalent ad valorem rate of duty for the 30-year period averaged 54.27 per cent, ranging from a high of 71.18 per cent in 1899 to a low of 40 per cent under the act of 1913, and the equivalent specific rates of duty averaged 18.76 cents per square yard, ranging from a low of 12.06 cents per square yard in 1897 to a high of 43.23 cents per square yard in 1920. For the calendar year 1921 the ad valorem rate of duty averaged 40.44 per cent, and the equivalent specific rate 51.92 cents per square yard.

It may be noted that in 1891 an increase of duty from a flat 40 per cent ad valorem in 1890 to an average equivalent of 53.02 per cent in 1891 was accompanied by an increase in the recorded value of imports from $845,543 to $1,474,777, but as the classification was in the act of 1890 extended to cover all cotton pile fabrics instead of the "cotton velvet" of the preceding tariff, the actual effect of the higher rates is obscured. In 1895 a substantial decrease in the rate of duty was accompanied by a large increase over the unusually small imports of the preceding year. In 1898 a substantial increase in the rate of duty was accompanied by a large decrease from the record imports of the preceding year, but in the succeeding years imports were again large. The act of 1909 reenacted the pile fabric wording and rates of the act of 1897; imports showed a slight increase in 1910, and in 1911 increased to 4,189,917 square yards. The decrease of the rate of duty to 40 per cent in the act of 1913 apparently had little effect on imports, in fact imports in 1914 were somewhat less than in 1913. It is remarkable that during the seven years, 1911–1917, imports were almost stationary at approximately 4,000,000 to 4,500,000 square yards a year. After 1917 imports of cotton-pile fabrics were greatly reduced and though this was an effect of the war, the domestic industry has increased to a point where exports exceed imports.

TARIFF CONSIDERATIONS.

Pile fabrics are subject to the caprices of fashion and the demand for different varieties and grades fluctuates so from year to year that variations in volume and value of imports can not be used as accurate measures of the effect of tariff changes. It is evident, from a study of the imports given in Table 11, that any large decrease in the rate

of duty results in a temporary increase of imports, and any large increase in the rates of duty results in a temporary decrease in imports, but such increases or decreases are rarely sustained over succeeding years, and equally wide fluctuations are to be found in non-tariff years. The tariff on pile fabrics remained unchanged from 1898 to 1913, inclusive, and it is to be noted that although there was a tendency to decline down to 1910, imports increased in 1911 and then remained almost stationary for seven years, without regard to a decrease in duties in 1913. Imports were more than six times as large in 1899, with an equivalent rate of 71.18 per cent ad valorem, as they were in 1909, with an equivalent rate of 54.69 per cent ad valorem, although the tariff wording and rates were the same in both years. Imports were larger in 1913 under an equivalent 50.38 per cent ad valorem than they were in 1914 under an equivalent 44.32 per cent ad valorem. A study of imports and duties would seem to show that the exact height of the duty, within reasonable limits, is yearly becoming of less importance. The domestic industry has become so strong that foreign countries can hardly expect to compete on the American market with goods of the class made in the United States; imports have therefore become mainly supplementary and consist of high-class goods, goods that are sold in small quantities of any one style, and specialties involving such a large proportion of labor that American mills do not care to attempt them.

STATISTICAL TABLES.

TABLE 9.—*Cotton pile fabrics* [1]*—Production in United States.*

[From Federal Census.]

State.	1899		1904		1909	
	Quantity.	Value.[2]	Quantity.	Value.[2]	Quantity.	Value.
	Sq. yards.		*Sq. yards.*		*Sq. yards.*	
Pennsylvania	3,945,504	.....	2,944,944	.....	3,038,945	$1,515,405
Rhode Island	1,965,422	.....	3,422,296	.....	3,106,639	1,135,767
Massachusetts	1,687,597	.....	4,149,619	.....	6,109,238	1,707,507
New York	36,000	.....	3,748,163	.....	3,876,399	1,982,421
All other	327,000	.....	1,749,534	.....	3,575,217	624,534
Total	7,961,523	$2,682,017	16,014,556	$4,790,573	19,706,438	6,965,634

State.	1914		1919	
	Quantity.	Value.	Quantity.	Value.
	Sq. yards.		*Sq. yards.*	
Pennsylvania	4,793,205	$2,434,588	6,483,830	$11,575,008
Rhode Island	5,457,570	2,140,780	5,180,230	4,166,569
Massachusetts	8,010,211	2,054,181	12,059,895	9,240,219
New York	3,832,967	874,834	16,479,825	11,691,755
All other	7,034,750	1,035,760		
Total	29,128,703	8,540,143	40,183,780	36,673,551

[1] Velvets, corduroys, plushes, etc., not including terry weaves.
[2] Not shown by States.

TABLE 10.—*Cotton pile fabrics, except corduroys—General imports by countries.*

Fiscal year.	United Kingdom.	Germany.	France.	Austria-Hungary.	Japan.	All other.	Total.
	Sq. yards.	*Sq. yards.*	*Sq. yards.*	*Sq. yards.*	*Sq. yards.*	*Sq. yards.*	*Sq. yards.*
1907 [1]	1,892,316	527,637	152,554	1,302	231	1,455	2,575,495
1908	1,911,742	616,184	229,307	5,605	642	1,206	2,764,686
1909	634,094	260,332	145,143	196	160	2,814	1,042,739
1910	609,534	258,827	115,583	.....	717	2,291	986,952
1911	3,223,540	938,666	126,844	858	265	2,294	4,292,467
1912	3,296,269	1,359,965	163,750	10,850	298	5,446	4,836,578
1913	2,883,797	1,537,988	229,628	44,409	227	918	4,696,967
1914	2,668,961	1,695,355	311,707	52,187	2,494	18,340	4,749,044
1915	2,206,691	1,361,916	112,676	14,543	1,448	19,206	3,716,480
1916	3,447,973	3,052	47,373	.....	1,259	6,168	3,505,825
1917	3,743,140	.....	23,141	.....	4,998	6,910	3,778,189
1918	827,263	.....	11,333	.....	1,719	3,777	844,092
1919 [2]	299,786	297	10,494	.....	10	822	311,409
1920 [2]	591,200	8,940	141,213	.....	2,296	16,863	760,512
Annual average	2,016,879	612,083	130,053	9,282	1,198	6,322	2,775,817
1921 (calendar year) [2]	244,801	21,967	39,273	.....	24	1,517	307,582

Fiscal year. [3]	United Kingdom.	Germany.	France.	Austria-Hungary.	Japan.	All other.	Total.
1907 [1]	$635,065	$243,553	$82,830	$474	$222	$1,571	$963,715
1908	668,035	265,284	99,983	1,169	460	605	1,035,536
1909	207,136	131,018	83,332	125	240	1,310	423,161
1910	221,706	123,542	85,663	.....	539	1,074	432,524
1911	1,269,610	465,058	103,526	466	130	1,349	1,840,139
1912	1,579,734	730,929	124,999	5,971	281	2,032	2,443,946
1913	1,525,400	845,768	167,973	26,472	196	10,641	2,576,440
1914	1,199,993	912,221	237,994	19,890	4,935	6,553	2,381,486
1915	994,258	647,221	78,536	6,280	573	6,382	1,733,250
1916	1,654,464	1,796	45,937	.....	632	3,223	1,706,052
1917	2,022,105	.....	20,029	.....	2,577	4,148	2,048,859
1918	687,524	.....	8,035	.....	934	2,549	699,342
1919 [2]	321,080	59	7,846	.....	4	988	329,977
1920 [2]	761,372	13,916	66,891	.....	541	24,336	867,056
Annual average	981,977	312,883	86,684	4,346	875	4,769	1,391,534
1921 (calendar year) [2]	172,511	32,106	50,435	.....	32	1,211	256,295

[1] General imports of cotton pile fabrics were not recorded prior to 1907.
[2] Includes corduroys.
[3] Entry values in dollars.

TABLE 11.—*Cotton pile fabrics* [1] *(not including manufactures of)—Imports for consumption—Revenue.*

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per square yard.	Actual and computed ad valorem. rate.	Actual and computed specific duty per square yard.
		Sq. yds.			*Cents.*	*Per cent.*	*Cents.*
1891	Compound, minimum 40 per cent ad valorem.	2,957,779	[2] $1,474,777	$781,972	[3] 33.69	53.02	19.97
1892	do	5,703,553	1,804,068	1,111,937	31.63	61.63	19.50
1893	do	7,670,310	2,429,382	1,489,115	31.67	61.30	19.41
1894	do	3,888,669	1,305,954	783,596	33.58	60.00	20.15
1895	do	747,359	238,456	145,037	31.90	60.82	19.41
1895	Gray, 40 per cent; other than gray, 47½ per cent ad valorem.	6,877,507	2,104,761	983,605	30.61	46.73	14.30
1896	do	8,558,074	2,584,239	1,207,583	30.20	46.73	14.11
1897	do	15,917,514	4,181,038	1,920,411	26.27	45.93	12.06
1898	do	1,722,920	481,030	221,749	27.92	46.10	12.86
1898	Compound, minimum 47½ per cent ad valorem.	3,081,496	821,296	575,567	26.65	70.08	18.67
1899	do	6,837,987	1,738,826	1,237,723	25.43	71.18	18.10
1900	do	9,469,648	2,319,714	1,641,807	24.50	70.78	17.34
1901	do	8,405,862	2,265,808	1,503,971	26.96	66.38	17.89
1902	do	9,659,808	2,763,350	1,769,115	28.61	64.02	18.31
1903	do	9,085,835	2,794,265	1,735,258	30.75	62.10	19.10
1904	do	6,978,651	2,129,193	1,335,125	30.51	62.70	19.13
1905	do	5,211,982	1,588,083	982,881	30.47	61.89	18.86
1906	do	3,577,613	1,244,616	729,650	34.79	58.62	20.39
1907	do	3,218,711	1,137,245	653,612	35.33	57.47	20.31
1908	do	2,646,623	995,210	555,034	37.60	55.77	20.97
1909	do	1,122,591	470,334	257,243	41.90	54.69	22.92
1910 [4]	do	1,234,078	518,417	281,218	42.01	54.75	22.79
1911	do	4,189,917	1,810,847	957,017	43.22	52.85	22.84
1912	do	4,608,418	2,267,321	1,159,216	49.20	51.13	25.15
1913	do	4,308,398	2,337,410	1,177,513	54.25	50.38	27.33
1914	do	1,795,947	966,699	481,951	53.82	49.86	26.83
1914	40 per cent ad valorem.	2,304,556	1,237,525	495,010	53.70	40.00	21.48
1915	do	4,118,656	1,992,075	796,830	48.37	40.00	19.35
1916	do	4,551,696	2,075,676	830,271	45.60	40.00	18.24
1917	do	4,567,918	2,180,022	872,009	47.72	40.00	19.09
1918	do	1,127,071	808,437	323,375	71.73	40.00	28.69
1919	do	533,381	498,103	199,241	93.39	40.00	37.35
1920	do	832,016	899,285	359,714	108.09	40.00	43.23
Annual average.		5,250,351	1,815,449	985,179	34.58	54.27	18.76
July 1–Dec. 31, 1920	40 per cent ad valorem.	527,351	623,508	249,402	118.23	40.00	47.29
Calendar year 1921	do [5]	[6] 210,954	270,788	109,522	128.36	40.45	51.92
Jan. 1–Sept. 21, 1922	do [5]	[7] 192,675	223,455	90,340	115.98	40.43	46.89

[1] Cotton velvets, velveteens, corduroys, plushes, etc.
[2] Includes velvet, quantity not given, valued at $478,449, on which $191,379.60 duty was assessed.
[3] Value per unit covers only that portion of the 1891 imports for which quantity is known.
[4] Imports of terry cloth (but not manufactures of) are included in the records for 1910 and subsequent years. They are not included in the years prior to 1910, as they were dutiable as "Manufactures of cotton not otherwise provided for" under the acts of 1890 and 1894, and as countable cotton cloth under the act of 1897.
[5] Plus 7 cents a pound if containing cotton of 1⅛-inch staple or longer. (Emergency tariff act of May 27, 1921.)
[6] Includes 23,174 square yards (17,243 pounds), valued at $35,445, paying additional duty of $1,207 because of the 7 cents a pound surtax levied by the emergency tariff act.
[7] Includes 33,464 square yards (13,682 pounds), valued at $34,780, paying additional duty of $958 because of the 7 cents a pound surtax levied by the emergency tariff act.

TABLE 12.—*Manufactures of cotton pile fabrics—Imports for consumption—Revenue.*

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per square yard.	Actual and computed ad valorem rate.	Actual and computed specific duty per square yard.
		Sq. yards.			*Cents.*	*Per cent.*	*Cents.*
1898 [1]	Compound	12,482	$4,470	$3,247	35.8	72.64	26.01
1899	do	1,814	1,247	654	68.7	52.45	36.05
1900	do	4,847	1,686	1,172	34.8	69.51	24.18
1901	do	6,108	2,377	1,565	38.9	65.84	28.62
1902	do	13,769	5,095	3,435	37.0	67.42	24.98
1903	do	6,906	3,015	1,884	43.7	62.49	27.28
1904	do	8,988	4,068	2,500	45.3	61.46	27.81
1905	do	9,255	4,043	2,521	43.7	62.35	27.24
1906	do	12,987	4,687	3,199	36.1	68.25	24.63
1907	do	11,992	5,060	3,208	42.2	63.40	36.75
1908	do	9,365	4,022	2,541	42.9	63.18	27.13
1909	do	7,014	3,247	2,008	46.3	61.84	28.63
1910	do	12,405	5,204	3,292	41.9	63.26	26.84
1911	do	6,779	3,968	2,195	58.5	55.32	32.38
1912	do	13,811	7,128	4,159	51.6	58.35	30.11
1913	do	18,816	11,048	6,131	58.7	55.49	32.58
1914	do	3,770	1,687	1,021	44.7	60.52	27.08
1914	40 per cent ad valorem.	[2]	209,595	83,838	.....	40.00	.....
1915	do	[2]	267,967	107,187	.....	40.00	.....
1916	do	[2]	204,338	81,735	.....	40.00	.....
1917	do	[2]	99,847	39,939	.....	40.00	.....
1918	do	[2]	31,326	12,530	.....	40.00	.....
1919	do	[2]	29,339	11,736	.....	40.00	.....
1920	do	[2]	135,538	54,215	.....	40.00	.....
Annual average		.....	45,652	18,953	.....	41.52	.....
July 1–Dec. 31, 1920	40 per cent ad valorem.	[2]	75,759	30,304	.....	40.00	.....
Calendar year 1921	do [3]	[2]	[4] 90,117	36,253	.....	40.23	.....
Jan. 1–Sept. 21, 1922	do [3]	[2]	[5] 64,908	26,251	.....	40.44	.....

[1] Prior to 1898 manufactures of pile fabrics were dutiable under the basket clause for "All other manufactures of cotton not specially provided for," and there are no records as to the amounts brought in.

[2] Not recorded.

[3] Plus 7 cents a pound if containing cotton of 1⅛-inch staple or longer. (Emergency tariff act of May 27, 1921.)

[4] Includes 2,939 pounds, valued at $7,740, paying additional duty of $206 because of the 7 cents a pound surtax levied by the emergency tariff act.

[5] Includes 4,111 pounds, valued at $14,330, paying additional duty of $288 because of the 7 cents a pound surtax levied by the emergency tariff act.

Cotton pile fabrics, and manufactures thereof—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1883	325	* * * cotton velvet	40 per cent ad valorem.
1890	350	Plushes, velvets, velveteens, corduroys, and all pile fabrics composed of cotton or other vegetable fiber, not bleached, dyed, colored, stained, printed, or painted.	10 cents per square yard and 20 per cent ad valorem.
		All such goods if bleached	12 cents per square yard and 20 per cent ad valorem.
		If dyed, colored, stained, painted, or printed	14 cents per square yard and 20 per cent ad valorem.
		But none of the foregoing articles in this paragraph shall pay a less rate of duty than.	40 per cent ad valorem.
1894	259	Plushes, velvets, velveteens, corduroys, and all pile fabrics composed of cotton or other vegetable fiber, not bleached, dyed, colored, stained, painted, or printed.	Do.
		On all such goods if bleached, dyed, colored, stained, painted, or printed.	47½ per cent ad valorem.
1897	315	Plushes, velvets, velveteens, corduroys, and all pile fabrics, cut or uncut; any of the foregoing composed of cotton or other vegetable fiber, not bleached, dyed, colored, stained, painted, or printed.	9 cents per square yard and 25 per cent ad valorem.
		If bleached, dyed, colored, stained, painted, or printed	12 cents per square yard and 25 per cent ad valorem.
		Provided, That corduroys composed of cotton or other vegetable fiber, weighing 7 ounces or over per square yard, shall pay a duty of.	18 cents per square yard and 25 per cent ad valorem.
		Provided further, That manufactures of articles in any form including such as are commonly known as bias dress facings or skirt bindings, made or cut from plushes, velvets, velveteens, corduroys, or other pile fabrics composed of cotton or other vegetable fiber, shall be subject to the foregoing rates of duty and in addition thereto.	10 per cent ad valorem.
		Provided further, That none of the articles or fabrics provided for in this paragraph shall pay a less rate of duty than.	47½ per cent ad valorem.
1909	325	Plushes, velvets, velveteens, corduroys, and all pile fabrics, cut or uncut, whether or not the pile covers the entire surface; any of the foregoing composed of cotton or other vegetable fiber, except flax, not bleached, dyed, colored, stained, painted, or printed.	9 cents per square yard and 25 per cent ad valorem.
		If bleached, dyed, colored, stained, painted, or printed	12 cents per square yard and 25 per cent ad valorem.
		Provided, That corduroys composed of cotton or other vegetable fiber, weighing 7 ounces or over per square yard, shall pay a duty of.	18 cents per square yard and 25 per cent ad valorem.
		Provided further, That manufactures or articles in any form, including such as are commonly known as bias dress facings or skirt bindings, made or cut from plushes, velvets, velveteens, corduroys, or other pile fabrics composed of cotton or other vegetable fiber, shall be subject to the foregoing rates of duty and in addition thereto.	10 per cent ad valorem.
		Provided further, That none of the articles or fabrics provided for in this paragraph shall pay a less rate of duty than.	47½ per cent ad valorem.
1913	257	Plushes, velvets, plush or velvet ribbons, velveteens, corduroys, and all pile fabrics, cut or uncut, whether or not the pile covers the entire surface; any of the foregoing composed wholly or in chief value of cotton or other vegetable fiber, except flax, hemp, or ramie; and manufactures or articles in any form, including such as are commonly known as bias dress facings or skirt bindings, made or cut from plushes, velvets, velveteens, corduroys, or other pile fabrics composed of cotton or other vegetable fiber, except flax, hemp or ramie.	40 per cent ad valorem.
1922	910	Pile fabrics, composed wholly or in chief value of cotton, including plush and velvet ribbons, cut or uncut, whether or not the pile covers the whole surface, and manufactures, in any form, made or cut from cotton pile fabrics.	50 per cent ad valorem.
		Terry-woven fabrics, composed wholly or in chief value of cotton, and manufactures, in any form, made or cut from terry-woven fabrics.	40 per cent ad valorem.

COURT AND TREASURY DECISIONS.

The provision in paragraph 350 of the act of 1890 for "plushes, velvets, velveteens, corduroys, and all pile fabrics composed of cotton or other vegetable fiber" was construed to apply only to goods in

the piece and not to include velveteen dress facings, which were classified as manufactures of cotton under paragraph 355 of that act (Kursheedt Manufacturing Co. *v.* United States, 54 Fed., 159, of 1893). It was not until 1897 that a provision was made for articles made or cut from plushes, velvets, velveteens, corduroys, and other pile fabrics of cotton or other vegetable fiber in connection with those materials. In the act of that year (par. 315) the manufactured articles were made subject to the same rates of duty as the pile fabric materials and in addition thereto 10 per cent ad valorem. Pile fabrics in chief value of flax were held to be excluded from the provisions in that paragraph for pile fabrics (Stern *v.* United States, 98 Fed., 417, of 1899). Trimmings cut out of cotton velvet fabric in various open and scroll work designs and colors were held to come within that provision for cotton pile fabrics and not to be dutiable as cotton trimmings (Horstmann *v.* United States, 121 Fed., 147, of 1903). A pile fabric commercially known as velvet cord, ribbed velvet, or corded velvet was held not to be corduroy composed of cotton or other vegetable fiber within paragraph 315 of the act of 1897 (Stewart, etc., *v.* United States, 113 Fed., 928, of 1902). No rule was declared to exist in trade or commerce regarding fabrics having a pile of 3.5 millimeters or less in length as velvets, and those over 3.5 millimeters as plush (United States *v.* Silberstein, 153 Fed., 965, of 1907.)

The provision in paragraph 325 of the act of 1909 for "plushes, velvets, velveteens, corduroys, and all pile fabrics, cut or uncut, whether or not the pile covers the entire surface," was declared broad enough to include any pile fabric as commonly understood. The phrase "cut or uncut" was interpreted not to restrict the meaning, but merely to make the meaning clear. (Knauth *v.* United States, 6 Ct. Cust. Appls., 128, of 1915).

The provision for velvets composed of cotton or other vegetable fiber was declared more specific than the provision in paragraph 321 for cloth composed of cotton or other vegetable fiber and silk, and was held to include velvet composed in chief value of cotton with silk back. (Abstract 36784, T. D. 34871, of 1914.)

Cotton terry cloth has been variously classified. Under the act of 1890 it was held to come within the provision for manufactures of cotton rather than as countable cotton cloth or as pile fabrics. (G. A. 2310, T. D. 14499, of 1893.) It was held dutiable as countable cotton cloth under the act of 1897 (G. A. 5838, T. D. 25746, of 1904). It was held dutiable as pile fabrics uncut under the act of 1909 (G. A. 7572, T. D. 34545, of 1914), and as pile fabrics under the act of 1913 (T. D. 34287, of 1914).

Pile fabrics composed in chief value of cotton chenille were held to be more specifically provided for as pile fabrics than as articles of which cotton chenille is the component material of chief value (Abstract 43268, of 1919).

Loop crêpe was classified as cotton cloth (Abstracts 38432, of 1915, and 39410, of 1916).

TAPESTRIES AND OTHER JACQUARD FIGURED UPHOLSTERY GOODS.

[Paragraph 258, act of 1913; paragraph 909, act of 1922.]

SUMMARY.

The domestic industry normally produces most of the Jacquard woven upholstery goods, such as tapestry, brocatelle, pocket cloths, armures, damasks, and brocades, that are required for domestic consumption. Imports are mainly on the ground of quality or design.

Judicial interpretation of the phrase "Jacquard figured upholstery goods" in paragraph 258 of the act of 1913, was to make chief use rather than eo nomine specification the controlling rule of classification, and, therefore, to admit under paragraph 258 not only loom-woven madras muslin but also nets, nettings, and laces, if Jacquard figured and intended for use as curtains or other decoration of apartments, although such goods were made on net, Levers lace, or other special machines. The record import of $3,259,906 in the calendar year 1921 was due mainly to the inclusion of such lightweight lace-like fabrics under the import classification of Jacquard figured upholstery goods. To remedy this situation and to make clear the intent of Congress there was substituted in the act of 1922 (par. 909) the more restrictive wording "Jacquard woven upholstery cloths."

GENERAL INFORMATION.

DESCRIPTION.

Tapestries are yarn-dyed figured fabrics made with two or more sets of warp yarns and two or more sets of filling yarns, and the machine-made goods are always woven with a Jacquard. The designs are elaborate and require a larger number of cards than are necessary for most Jacquard fabrics. In weaving these double-texture cloths of intricate designs it is necessary to employ a weaver to each loom and the rate of production is very slow. There are different qualities, but as a rule labor forms a larger proportion of the total cost of manufacture than with the general run of fancy goods.

Tapestries are upholstery fabrics. They are used for covering not only furniture and walls but also seats in inclosed automobiles and in railway coaches. As panels they are hung for wall decoration, as pictures are used. They are also used for making curtains, portières, pillow tops, table covers and scarfs, or as borders for trimming such articles. They are also extensively used for appliqué on plain fabrics.

Tapestries rarely weigh less than 6 ounces per square yard, the majority being much heavier.

Imports are largely in widths of about 50 inches, in pieces containing a continuous picture or tapestry design; there is also a fair proportion imported in short lengths for use as wall or screen panels, and many of these are made by hand or on hand looms. When made by hand, according to the original method, there is employed a vertical warp and into this the short lengths of filling yarns of the various colors required to form the design are inserted by hand. Pre-war imports of tapestry were mainly from France, particularly from the Roubaix-Tourcoing section, and Belgium. This tapestry

manufacture was stopped by the invasion of the Germans in September, 1914, and such tapestry as was received in America after that date was from stock in the hands of Paris and London jobbers, supplemented by a small amount of English-made tapestries.

Other Jacquard figured upholstery cloths of a somewhat similar nature to tapestries, in that two or more sets of warp yarns and two or more sets of filling yarns are employed to produce a cloth of double texture, include such goods as brocatelle and "pocket cloths." Brocatelle is defined [9] as "A double cloth fabric, with two warps and two fillings, a face warp and weft, and a back warp and weft. These warps and fillings, however, interweave with one another, thereby binding together the two sets of warp and filling threads, with this peculiarity, that the face warp threads do not show on the back of the fabric nor does the back filling show on the face of the fabric, whereas, on the contrary, the face filling shows on the back and the back warp threads show on the face." The term "pocket cloths," as used in the Philadelphia upholstery industry, refers to another type of double cloth where two or more sets of warp and of filling yarns are used to produce two cloths, one above the other, which are interwoven only at certain Jacquard figured points; the effect is that of a fancy quilted fabric.

"Tapestry" is a term that applies to a fairly definite class of fabrics but this is not true as to the term "other Jacquard figured upholstery goods" which was bracketed therewith in the tariff acts of 1909 and 1913. "Upholstery goods" is a general term that has no definite, uniform, and general meaning throughout the trade, although some dealers differentiate between upholstery goods used for covering furniture, and drapery goods such as curtains. In Bing *v.* United States (3 Ct. Cust. Appls., 115; T. D. 32365, of 1912) the court cited with approval the definition of "upholstery goods" given in the Century Dictionary and the Standard Dictionary in terms broad enough to include all the interior textile decorations of an apartment.[10] The lexicographic definition thus quoted in 1912 became the legal definition because the courts found such great diversity in testimony given by business men as to prove that the term is a very loose one commercially.

Under the act of 1909 no attempt was made to include Jacquard figured laces, nettings, trimmings, braids, and ornaments made of cotton, even though they weighed in some instances over 6 ounces per square yard and were used for curtains, under the new provision for Jacquard figured upholstery goods and they remained dutiable as laces, nettings, etc., at a higher rate. (See T. D. 37465, G. A. 8119, as to testimony to this effect offered by the Government.)

The omission in the act of 1913 (par. 258) of the words "weighing over 6 ounces per square yard" was construed by the Court of Customs Appeals to enlarge the meaning of the term "upholstery goods" to include goods of a lighter and less substantial nature than woven piece goods and articles used as furniture or wall coverings. All Jacquard figured textile fabrics or articles used as interior decorations or fittings of apartments were therefore held to be

[9] See "A Cotton Fabrics Glossary," by Bennett, p. 528.

[10] The Century Dictionary defines *upholstery* as furniture covered with textile material, and hangings, curtains, and the like. A general term for all such interior decorations and fittings as are made with textiles.
The Standard Dictionary defines *upholstery* as goods or materials used in upholstering; textile decorations of an apartment.

"Jacquard figured upholstery goods," including not only light curtain goods such as the clipped "madras muslin" woven on a loom, but curtain goods not made on a loom at all, such as Jacquard figured nets and laces, also doilies, bureau scarfs, tidies, and other articles made by sewing together hand-made laces, machine-made laces, and embroideries. The effect of this judicial interpretation was to make chief use rather than eo nomine specification the controlling rule of classification and many of the higher and more advanced goods which were assumed to be dutiable in the act of 1913, under paragraph 358, at 60 per cent ad valorem, were later brought in under paragraph 258, at 35 per cent ad valorem, although those made without the use of the Jacquard, such as plain nets, remained dutiable at the higher rate.

DOMESTIC PRODUCTION.

Materials.—The main material used in the domestic upholstery mills is dyed cotton yarn. This is used in counts from 4s to 80s, single and ply. The great majority of the cotton yarns used is in coarse and medium counts under 40s. Most of the upholstery mills also use more or less yarns of other material, particularly wool, spun silk, and artificial silk.

Methods of production.—The essential point of demarcation between upholstery mills and mills producing Jacquard fabrics for use as wearing apparel is in the greater size and more elaborate character of the patterns, involving the use of a much larger number of Jacquard cards. The first cost of producing and placing on the loom a tapestry or similar Jacquard upholstery design is usually much greater than that of Jacquard designs for dress goods and the cost of the fabric is much enhanced thereby, particularly as many of these fabrics are sold in limited quantities of any one pattern.

Organization.—The upholstery mills as a rule buy all yarns required and confine themselves to yarn dyeing, weaving, and finishing.

Geographical distribution.—The manufacture of cotton tapestries, brocatelles, pocket cloths, armures, damasks, brocades, and similar goods of the elaborate design and substantial texture used for covering furniture and walls, usually known as Jacquard figured upholstery goods, is mainly concentrated in Philadelphia. This section of the industry, however, appears to have been stationary for some time so far as regards quantity of output, although the value of the output has been steadily increasing. There are a few mills in Pennsylvania outside of Philadelphia, and the number in New Jersey and other States is increasing. In 1899 Pennsylvania produced over 94 per cent of the cotton tapestry yardage of the country, but in 1914 its proportion was slightly less than 80 per cent, and in 1919 it had dropped to less than 42 per cent. The tapestries produced in other States, however, are lighter and less valuable per yard, so that in 1919 Pennsylvania accounted for more than three-fourths of the total value.

Domestic production.—Domestic production of "cotton tapestries" was practically stationary in the period from 1899, when it amounted to 10,166,538 square yards, valued at $4,158,600, to 1914, when it amounted to 10,137,710 square yards, valued at $5,411,592. In the next five years, however, the production more than doubled, amounting to 21,705,586 square yards, valued at $17,295,608, in

1919. The census figures are for "cotton tapestry" only, and the production of other heavy Jacquard woven upholstery fabrics, such as brocatelle, pocket cloths, armures, damasks, and brocades, is not recorded separately; the same is true of light Jacquard woven upholstery fabrics such as madras muslin. Inasmuch as the Census records separately only a portion of the Jacquard woven upholstery cloths, it is not possible to make any exact contrast as to the proportion that imports bear to the total domestic consumption.

FOREIGN PRODUCTION.

The principal foreign producing nations are France and Belgium, with England and Germany ranking next.

IMPORTS.

Beginning in 1915, decisions of the Court of Customs Appeals classified as dutiable under paragraph 258 an increasing range of goods, particularly Jacquard figured nets, nettings, and laces, for curtain use, which were previously dutiable under paragraph 358. Refunds of duties were made in those cases, but customs officials continued to assess the 60 per cent rate pending final determination of the dutiable classification. This litigation was in the main ended in favor of the 35-per cent rate and the figures of imports for recent years, particularly 1920 and 1921, include large quantities of Jacquard figured nets, nettings, and laces used for drapery or upholstery purposes. These fabrics were not so included under the 1909 wording and the proportion so included in the earlier years of the 1913 act is not clear, but the continual enlargement of the meaning of the term "Jacquard figured upholstery goods" obscures any interpretation of the actual effect of the lowering of the rate of duty from 50 per cent in 1909 to 35 per cent in 1913.

Imports of "Tapestries and other Jacquard woven upholstery goods" were valued at $363,639 in the fiscal year 1911, the first complete year under the act of 1909, and at $3,259,906 in the calendar year 1921, the last complete year under the act of 1913. As shown above, however, the articles included under this heading in the two periods are not the same and the figures are not comparable. As far as Jacquard woven upholstery cloths (the more restrictive classification adopted in the act of 1922) are concerned, there has probably been little, if any, increase in imports during the past decade.

TARIFF HISTORY.

Tapestry panels and other goods cut or manufactured from tapestry were classified as manufactures of cotton not otherwise provided for until 1903, when they were held to be dutiable as countable cottons. (United States *v.* Bernhard, 150 Fed. 375; T. D. 24352, G. A. 5319.) This decision led to the domestic manufacturers of tapestry presenting a brief to Congress and requesting specific mention of their goods in the act of 1909. In accordance therewith there was inserted in the act of 1909, in paragraph 326, a section reading:

* * * Tapestries, and other Jacquard figured upholstery goods, weighing over 6 ounces per square yard, composed wholly or in chief value of cotton or other vegetable fiber; any of the foregoing in the piece or otherwise, 50 per centum ad valorem.

This provision was retained in paragraph 258 of the act of 1913, with the exception that the modifying phrase "weighing over 6 ounces per square yard" was omitted, and the rate of duty was reduced to 35 per cent ad valorem.

In the act of 1922 the wording was changed to "Tapestries and other Jacquard woven upholstery cloths," the intent of the substitution of "woven" in lieu of "figured," and of "cloths" in lieu of "goods" being to prevent the possibility of net or lace of any kind or for any use being included hereunder. In addition to Jacquard woven upholstery cloths, however, paragraph 909 of the act of 1922 includes at the same rate of duty "Jacquard woven blankets and Jacquard woven napped cloths."

STATISTICAL TABLES.

TABLE 13.—*Cotton tapestries—Production in United States.*

[From Federal Census.]

Census year.	Pennsylvania.		All other States.		Total.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Square yards.		*Square yards.*		*Square yards.*	
1899	9,586,606	[1]	579,932	[1]	10,166,538	$4,158,600
1904	8,691,354	[1]	913,652	[1]	9,605,006	4,242,506
1909	8,783,867	$4,163,683	1,873,518	$560,224	10,657,389	4,723,907
1914	8,106,698	4,803,688	2,031,012	607,904	10,137,710	5,411,592
1919	9,052,124	13,160,694	12,653,462	4,134,914	21,705,586	17,295,608

[1] Not recorded.

TABLE 14.—*Tapestries and other Jacquard figured upholstery goods—Imports for consumption—Revenue.*

Fiscal year.	Rate of duty.	Quantity.[1]	Value.	Duty collected.	Actual and computed ad valorem rate.
					Per cent.
1910[2][3]	50 per cent ad valorem.		$235,138	$117,569	50.00
1911[3]	do		363,639	181,819	50.00
1912[3]	do		353,208	176,604	50.00
1913[3]	do		349,192	174,596	50.00
1914[3]	do		121,502	60,751	50.00
1914	35 per cent ad valorem.		634,618	222,116	35.00
1915	do		695,897	243,564	35.00
1916	do		673,432	235,701	35.00
1917	do		822,686	287,940	35.00
1918	do		475,925	166,574	35.00
1919	do		272,451	95,358	35.00
1920	do		1,636,417	572,746	35.00
Annual average[4]			608,633	232,600	38.22
July 1–Dec. 31, 1920	35 per cent ad valorem.		2,383,314	834,160	35.00
Calendar year 1921	do.[5]		[6]3,259,906	1,157,879	35.52
Jan. 1–Sept. 21, 1922	do.[5]		[7]2,044,232	727,946	35.61

[1] Not recorded.
[2] Covers period Aug. 6, 1909, to June 30, 1910, inclusive.
[3] Includes manufactures of chenille which, however, constituted but a small portion of the total imports shown.
[4] Average for 10.9 years.
[5] Plus 7 cents a pound if containing cotton of 1⅛-inch staple or longer. (Emergency tariff act of May 27, 1921.)
[6] Includes 241,600 pounds, valued at $561,837, paying additional duty of $16,912, because of the 7 cents a pound surtax levied by the emergency tariff act.
[7] Includes 178,063 pounds, valued at $584,417, paying additional duty of $12,464, because of the 7 cents a pound surtax levied by the emergency tariff act.

Tapestries and other Jacquard figured upholstery goods—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1909	326	* * * tapestries, and other Jacquard figured upholstery goods, weighing over 6 ounces per square yard, composed wholly or in chief value of cotton or other vegetable fiber; any of the foregoing, in the piece or otherwise.	50 per cent ad valorem.
1913	258	* * * tapestries, and other Jacquard figured upholstery goods, composed wholly or in chief value of cotton or other vegetable fiber; any of the foregoing, in the piece or otherwise.	35 per cent ad valorem.
1922	909	Tapestries, and other Jacquard woven upholstery cloths, Jacquard woven blankets and Jacquard woven napped cloths, all the foregoing, in the piece or otherwise, composed wholly or in chief value of cotton or other vegetable fiber.	45 per cent ad valorem.

Court and Treasury Decisions.

In the act of 1909 (par. 326) tapestries and other Jacquard figured upholstery goods were specifically provided for, with a limitation, however, to those "weighing over 6 ounces to the square yard." While this act was in force there were imported Jacquard figured cotton panels of various sizes intended for use in screens. The importers contended that the panels did not serve utilitarian purposes, such as curtains and furniture coverings, and therefore were not properly upholstery goods. The Court of Customs Appeals, however, took the view that the term "upholstery goods" in its ordinary meaning, which did not differ from any proved commercial designation, included the merchandise in issue because they were textile decorations of apartments (Bing *v.* United States, 3 Ct. Cust. Appls., 115, of 1912). The definition in that case of the term "upholstery goods," as used in paragraph 326 of the act of 1909, was subsequently declared "broad enough to include all the interior textile decorations and fittings of apartments" (United States *v.* Mills, 8 Ct. Cust. Appls., 422, 425, of 1918).

In the act of 1913 (par. 258), the words "weighing over 6 ounces per square yard" were omitted. This omission was construed by the Court of Customs Appeals to enlarge the meaning of the term "upholstery goods" to include goods of a less substantial character and weight than those weighing more than 6 ounces to the square yard and to comprehend nettings chiefly used for curtains (Carter *v.* United States, 6 Ct. Cust. Appls., 253, of 1915).

The Carter case was followed in United States *v.* Mills, 7 Ct. Cust. Appls., 388, of 1917, and 8 Ct. Cust. Appls., 422, of 1918, and in other cases. A commercial meaning different from common usage, excluding nets and nettings from the term "upholstery goods," was declared by the court not to be established. The effect of these decisions was to make chief use rather than eo nomine specification the controlling rule of classification and to subject Jacquard figured upholstery goods to a lower rate of duty than plain nets and nettings. The court took into consideration the fact that Congress was aware of the decision in Bing *v.* United States, supra, and it made no change in the paragraph except to omit the limitation that only such upholstery goods as weighed over 6 ounces per square yard should be dutiable thereunder (8 Ct. Cust. Appls., 426).

Two decisions of the Board of General Appraisers made in 1920 indicate the extent to which the rule of chief use was applied

to Jacquard figured upholstery goods. After following the decisions of the Court of Customs Appeals in classifying as upholstery goods Jacquard figured cotton lace, the chief use of which is for the decoration of bureau scarfs, table doilies, and similar articles used on household furniture (G. A. 8328, T. D. 38317, of Mar. 9, 1920), the board held that the finished products—doilies, bureau scarfs, tidies, and similar articles made by sewing together handmade laces, embroideries, and Jacquard figured machine-made laces—came within the provisions for Jacquard figured upholstery goods in paragraph 258 (G. A. 8359, T. D. 38464, of June 30, 1920). In this decision the board said:

> We were unable to agree with the contention of the Government in that case (G. A. 8328, T. D. 38317, supra) that a distinction should be made somewhere between such things, on the one hand, as curtains, wall hangings, and permanent furniture coverings, and, on the other hand, the decorative textile articles which are found in household apartments as ornaments for some article therein.

The board gave as a reason:

> It is well known, as counsel for the importers state in their brief, that in interior decorations of apartments it is customary to treat such articles as bureau scarfs, doilies, bed sets, pillow shams, etc., as a part of the decorative scheme, and that they harmonize with and are frequently made out of the same materials as the draperies, wall coverings, and furniture coverings.

The board furthermore disagreed with the Government counsel in the contention that the provisions for Jacquard figured upholstery goods was intended to cover only such upholstery goods as in their imported condition may be said to be the product of a machine with a Jacquard attachment, and that it was not intended to cover upholstery goods made in part of Jacquard figured goods and in part of other materials. The reason for the dissent as expressed in the board's opinion is as follows:

> There might be some force in the contention of the Government if the law provided for upholstery goods made on a machine with a Jacquard attachment. The provision, however, is for Jacquard figured upholstery goods, and we think the requirements of the statute are met when it is shown, as it is in this case, that the articles are Jacquard figured and that they are upholstery goods. This provision has been the subject of much litigation, and the term "upholstery goods," as we have said, has been defined as including all the interior textile decorations and fittings of apartments, and it has been held that the test of classification under the provision is the use to which the goods are applied. The provision has not been limited to materials for making "interior textile decorations and fittings of apartments," but has been held to include complete articles, such as curtains, panels to be used as panels of screens or to be hung upon the walls, table covers, etc.

Madras muslin curtains in the piece, madras muslin curtains, and madras muslin curtains scalloped, Jacquard figured, were also in issue and were held to come within the provision for Jacquard figured upholstery goods in paragraph 258 (United States *v.* Snow's United States Sample Express Co., 6 Ct. Cust. Appls., 477, of 1916, same *v.* same, 8 Ct. Cust. Appls., 351, of 1918). Judge Smith dissented as to the scalloped goods. The principles of construction applicable to these goods are stated as follows in the head notes of the Snow's Express Co. case in 8 Court of Customs Appeals, 351:

> 1. Construction, paragraph 358, tariff act of 1913.
>
> The provision of paragraph 358, tariff act of 1913, "all articles or fabrics * * * scalloped by hand or machinery * * * by whatever name known" is equivalent to an enumeration of every scalloped article by its name, and amounts to an eo nomine designation of scalloped madras muslin curtains.

2. Construction, paragraph 258, tariff act of 1913.

Regardless of relative specificity of the terms employed, the intention of Congress, in the enactment of paragraph 258, tariff act of 1913, was to make the language "curtains * * * and other Jacquard figured upholstery goods, composed wholly or in chief value of cotton or other vegetable fiber; any of the foregoing in the piece or otherwise," inclusive of all goods falling therewithin and to exclude therefrom all other provisions of the act.

3. Construction—designations eo nomine and by use.

Where Congress has provided for an article eo nomine in one paragraph of a tariff act, and in another paragraph of the same act employs language comprehensive of the other designation, and rates it for duty according to use or when used for a certain purpose, there is manifested a strong evidence of an intention upon the part of Congress to make that use controlling and to make the designation by use operate as an exception to the eo nomine designation.

4. Scalloped Jacquard figured madras muslin curtains in the piece and otherwise and materials therefor.

Scalloped Jacquard figured madras muslin curtains in the piece and otherwise and materials therefor are dutiable under paragraph 258, tariff act of 1913 ("curtains * * * and other Jacquard figured upholstery goods, composed wholly or in chief value of cotton or other vegetable fiber; any of the foregoing in the piece or otherwise") and not under paragraph 358 ("all articles or fabrics * * * scalloped by hand or machinery * * * by whatever name known").

COTTON TABLE DAMASK, AND MANUFACTURES THEREOF.

[Paragraph 263, act of 1913; paragraph 911, act of 1922.]

SUMMARY.

The domestic production of cotton table damask has grown until it now supplies the bulk of the domestic demand and in addition furnishes considerable quantities for export to foreign countries.

The record value of imports of cotton table damask and manufactures thereof was reached in the fiscal year 1920 with $1,662,643, of which less than half consisted of cotton table damask in the piece. The highest pre-war value of imports was $759,491 in 1904; taking into consideration the subsequent rise in prices it is probable that there were more square yards of cotton table damask imported in 1904 than in 1920.

While imports are competitive, they are sold mostly in conjunction with imported linen table damask. Post-war increases in the total quantity of cotton table damask in the piece and manufactures thereof are due most largely to an increase in the latter, and though these are also competitive, they may be considered more supplementary, as they take the place of the linen damasks which have become scarce and dear.

GENERAL INFORMATION.

DESCRIPTION.

Damask is a single-structure fabric, Jacquard woven,[11] with the same type of weave used for both figure and ground, and distinguished by the fact that the design shows up on the smooth surface without the necessity of any contrast in color. The weave employed is a sateen twill (mainly 5 or 8 harness), the warp and filling being interchanged so as to show solid warp-sateen figures on a filling-sateen ground, or

[11] A domestic manufacturer of cotton table damask comments on this as follows: "Your definition is correct. Some tablecloths are woven on the dobby, but these are not damask, strictly speaking. The same statement applies to tablecloths woven with a plain weave, as damask is always made with a sateen twill."

vice versa. The threads in the figure lie at right angles to those in the ground, with the result that the light falling on the smooth surface of the cloth is refracted and the pattern made apparent. The clearness of the figure may be intensified by the use of warp and filling yarns that differ in material, twist, or luster; for instance, by the use of cotton warp and linen filling or a mercerized cotton warp and a plain cotton filling.

Damasks are made of silk, linen, cotton, wool, or other materials, and used for dress goods, upholstery, and other purposes. Table damasks are mainly of linen, of cotton, or of a union of the two. The soft natural luster of fully bleached flax, with its highly reflective power, makes it the favorite material for bleached damasks, and its peculiar qualities are intensified by beetling and calendering. Cotton table damask is an imitation of the more costly linen table damask and is very similar in width, weight, and design; it can also be made and usually is made to closely resemble it by subjection to mercerizing and other finishing treatments, but while the appearance of linen improves with domestic washing, that of cotton deteriorates. Some cotton table damask is woven in colors, usually Turkey red, blue, or tan, with white, but the majority is all white.

Manufactures of cotton table damask are largely tablecloths, table runners, napkins, and doilies. These may be cut from the ordinary cotton table damask in the piece and hemmed, but especially in the case of tablecloths and napkins, are more often cut and packed unhemmed in individual wrappings. These usually contain one tablecloth to the package of one dozen napkins, one piece, to the package. These tablecloths and napkins are cut from specially woven fabrics specially designed for cutting into specific lengths. A typical example is an 8 by 8-foot, or an 8 by 10-foot cloth, with a deep border design around the four sides. The package of napkins to match may be a piece 24 to 36 inches in width and long enough to cut into a dozen square napkins whose design is based on that of the cloth. The best linen damask is sold in sets of one dozen napkins and one cloth, but the bulk are of standard designs and are sold either separately or in sets. This is the case with cotton table damask.

DOMESTIC PRODUCTION.

The census did not record the production of cotton table damask prior to 1919, in which year it amounted to 27,499,294 square yards (10,543,966 pounds), valued at $9,544,478.

Materials.—Cotton table damasks are made of coarse to medium yarns, between 16s and 30s singles, using ordinary upland cotton. One manufacturer is now experimenting with ply yarns in order to produce a fabric that will compete with the best grade of imports.

Equipment.—The Jacquard loom used in American damask mills is of domestic manufacture and is similar to those used in weaving other Jacquard fabrics of the same class. Narrow looms can be used for such goods as napkins, but wide looms are necessary for tablecloths. The damask fabrics for tablecloths run from 54 to 72 inches in width, with the 58-inch width predominating.

Organization.—Most of the mills are self-contained, weaving damask from yarns spun in the same establishment. Some mills do their own finishing, but the majority of these goods are finished in outside plants which make a specialty of this line. One finisher, who handles the output of several plants, has perfected a finish in which viscose is used to impart to the cotton damask a linenlike gloss that is very durable. Most cotton table damasks are mercerized.

Geographical distribution.—The production of cotton table damask is not confined to any particular locality. The Official American Textile Directory, 1922, lists 43 mills, distributed through 12 States, making cotton damask. The largest producers are apparently North Carolina, Massachusetts, and Maine.

Domestic exports.—The domestic industry has built up a substantial export trade in cotton table damask. There are no exact statistics as to the amount of this trade, but Canada records imports from the United States valued at $132,259 in 1919 and $80,021 in 1922, fiscal years ended March 31. The shipments to Canada are only an indication, as it is known that there are also large shipments of American-made damask to Cuba, Argentina, Chile, and various other countries.

IMPORTS.

During the 30 years, 1891–1920, imports of cotton table damask, including manufactures of, averaged $463,875, ranging from a low of $153,551 in 1897 to a high of $1,662,643 in 1920. The highest pre-war value of imports was $759,491 in 1904; taking into consideration the fact that the unit values have considerably more than doubled, it is probable that the quantity of imports in 1904 was larger than in any subsequent year. The duties collected during these 30 years have averaged $156,879 annually, ranging from a low of $53,743 in 1897 to a high of $415,661 in 1920. Imports in the calendar year 1921 were valued at $1,097,929, on which the duty amounted to $276,875.

Manufactures of cotton table damask were not recorded separately from cotton table damask in the piece prior to the fiscal year 1910. The figures since that year indicate that prior to 1917 the importation of articles made of cotton table damask was negligible and that imports of cotton table damask consisted almost entirely of goods in the piece. Starting with 1917, imports of manufactures of cotton table damask increased until in the fiscal year 1919 they exceeded in value the imports of cotton table damask in the piece; this condition has held true in succeeding years. It will be noticed that the imports of cotton table damask as a whole were smaller in 1916 than in any year since 1901. Flax had by that time become so scarce and costly that the manufacturers of linen damask at Dunfermline and other foreign centers were forced to take up the production of all-cotton damasks as well as of union (linen and cotton) damasks in order to keep their plants going.

TARIFF HISTORY.

"Cotton damask" was first provided for in the act of 1883; this applied only to cotton damask in the piece and it was held (T. D. 8600 of 1887) that completed articles, such as table covers, were dutiable as manufactures of cotton. In the acts of 1890 (par. 355) and 1894 (par 264) this was changed to read "cotton damask, in the piece or otherwise." The words "in the piece or otherwise" were omitted in the act of 1897 (par. 321) and the word "table" inserted, making the provision read "cotton table damask." In the act of 1909 (par. 331) and in the act of 1913 (par. 263) the provision was for "cotton table damask, and manufactures of cotton table damask, or of which cotton table damask is the component material of chief value, not specially provided for in this section." In the act of 1922 (par. 911) the wording was changed to read "table damask composed wholly or in chief value of cotton, and manufactures, in any form, composed wholly or in chief value of such damask."

COMPETITIVE CONDITIONS.

The imported fabric has, in the opinion of most importers, a finish that resembles true linen more closely than does the usual domestic finish, and the fact that much of the increased shipments since 1916 are produced by linen manufacturers, designed and packed the same as linen, and labeled as imported, adds to their salability. Imports of cotton table damask compete with the domestic manufacture, but imports during the last few years have been to a certain extent supplementary in that they took the place of the former imports of linen table damask. The substitution of cotton imports for linen imports has been particularly noticeable in the increased shipments of the finished articles, such as tablecloths, napkins, and doilies, and to a less extent in that of goods in the piece. The domestic manufacturer controls the great bulk of the normal demand for cotton table damask, and unless linen prices again come within reach of the average consumer the high-speed, bulk-production methods of the American manufacturer will eventually allow him to take the greater part of the new trade on price as he did the old.

Statistical Tables.

TABLE 15.—*Cotton table damask and manufactures thereof* [1]*—Imports for consumption—Revenue.*

Fiscal year.	Rate of duty.	Quantity.[2]	Value.	Duty collected.	Actual and computed ad valorem rate.
					Per cent.
1891	40 per cent ad valorem.		$195,215	$78,086	40.00
1892	do		268,391	107,356	40.00
1893	do		371,891	148,756	40.00
1894	do		203,163	81,265	40.00
1895	do		26,074	10,430	40.00
	35 per cent ad valorem.		197,769	69,219	35.00
1896	do		163,165	57,108	35.00
1897	do		153,551	53,743	35.00
1898	do		3,056	1,070	35.00
	40 per cent ad valorem.		160,878	64,351	40.00
1899	do		202,725	81,090	40.00
1900	do		172,608	69,043	40.00
1901	do		177,542	71,017	40.00
1902	do		338,112	135,245	40.00
1903	do		704,038	281,382	40.00
1904	do		759,491	303,796	40.00
1905	do		442,252	176,900	40.00
1906	do		489,982	195,993	40.00
1907	do		521,272	208,509	40.00
1908	do		542,187	216,875	40.00
1909	do		517,824	207,129	40.00
1910	do		563,946	225,592	40.00
1911	do		434,802	173,921	40.00
1912	do		344,330	137,731	40.00
1913	do		350,475	140,190	40.00
1914	do		51,363	20,545	40.00
	25 per cent ad valorem.		451,978	112,994	25.00
1915	do		252,107	63,027	25.00
1916	do		250,211	62,553	25.00
1917	do		909,681	227,420	25.00
1918	do		1,088,278	272,069	25.00
1919	do		945,260	236,315	25.00
1920	do		1,662,643	415,661	25.00
Annual average			463,875	156,879	33.82
July 1–Dec. 31, 1920	25 per cent ad valorem.		671,534	167,883	25.00
Calendar year 1921	do.[3]		[4] 1,097,929	276,875	25.21
Jan. 1–Sept 21, 1922	do.[3]		[5] 509,770	128,163	25.14

[1] The word "table" was not used in connection with these imports prior to the act of 1897.
[2] Not recorded.
[3] Plus 7 cents a pound if containing cotton of 1⅛-inch staple or longer. (Emergency tariff act of May 27, 1921.)
[4] Includes 34,193 pounds, valued at $43,331, paying additional duty of $2,394 because of the 7 cents a pound surtax levied by the emergency tariff act.
[5] Includes 10,296 pounds, valued at $36,239 paying additional duty of $721 because of the 7 cents surtax levied by the emergency tariff act.

TABLE 16.—*Cotton table damask (excluding manufactures of)*[1]*—Imports for consumption—Revenue.*

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Sq. yards.			*Cents.*	*Per cent.*
1910	40 per cent ad valorem.	(2)	$551,861	$220,758		40.00
1911	do	(2)	421,212	168,485		40.00
1912	do	(2)	312,795	125,117		40.00
1913	do	(2)	320,759	128,304		40.00
1914	do	(2)	47,064	18,826		40.00
	25 per cent ad valorem.	(2)	423,340	105,835		25.00
1915	do	(2)	241,172	60,293		25.00
1916	do	(2)	220,716	55,179		25.00
1917	do	(2)	724,083	181,021		25.00
1918	do	(2)	759,296	189,824		25.00
1919	do	(2)	406,278	101,570		25.00
1920	do	(2)	796,727	199,182		25.00
Annual average			475,027	141,308		29.75
July 1–Dec. 31, 1920	25 per cent ad valorem.	376,359	228,388	57,097	60.68	25.00
Calendar year 1921	do[3]	[4] 806,373	350,022	88,841	43.41	25.38
Jan. 1–Sept. 21, 1922	do[3]	[5] 426,051	169,534	42,668	39.79	25.17

[1] The imports here shown are included in Table 15.
[2] Not recorded.
[3] Plus 7 cents a pound if containing cotton of 1⅛-inch staple or longer. (Emergency tariff act of May 27, 1921.)
[4] Includes 67,846 square yards (19,092 pounds), valued at $25,852, paying additional duty of $1,336 because of the 7 cents a pound surtax levied by the emergency tariff act.
[5] Includes 33,366 square yards (4,059 pounds), valued at $7,316, paying additional duty of $284 because of the 7 cents a pound surtax levied by the emergency tariff act.

TABLE 17.—*Manufactures of cotton table damask*[1]*—Imports for consumption—Revenue*

Fiscal year.	Rate of duty.	Quantity.[2]	Value.	Duty collected.	Actual and computed ad valorem rate.
					Per cent.
1910	40 per cent ad valorem.		$12,085	$4,834	40.00
1911	do		13,590	5,436	40.00
1912	do		31,535	12,614	40.00
1913	do		29,716	11,886	40.00
1914	do		4,299	1,720	40.00
	25 per cent ad valorem.		28,638	7,159	25.00
1915	do		10,935	2,734	25.00
1916	do		29,495	7,374	25.00
1917	do		185,598	46,399	25.00
1918	do		328,982	82,245	25.00
1919	do		538,982	134,745	25.00
1920	do		865,916	216,479	25.00
Annual average			189,070	48,511	25.66
July 1–Dec. 31, 1920	25 per cent ad valorem.		443,146	110,786	25.00
Calendar year 1921	do[3]		[4] 747,907	188,034	25.14
Jan. 1–Sept. 21, 1922	do[3]		[5] 340,236	85,496	25.13

[1] The imports here shown are included in Table 15.
[2] Not recorded.
[3] Plus 7 cents a pound if containing cotton 1⅛-inch staple or longer. (Emergency tariff act of May 27, 1921.)
[4] Includes 15,101 pounds, valued at $17,479, paying additional duty of $1,057 because of the 7 cents a pound surtax levied by the emergency tariff act.
[5] Includes 6,237 pounds, valued at $10,387, paying additional duty of $437 because of the 7 cents a pound surtax levied by the emergency tariff act.

UNITED STATES TARIFF COMMISSION
WASHINGTON, D. C.

Tariff Information Survey I-3a

100 IMPORTED COTTON CLOTHS

Showing cloth particulars, invoice prices in 1913 and 1920, and rates of duty applicable under acts of 1909, 1913, and 1922

WASHINGTON
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FOREWORD.

The tables here printed were referred to on page 41 of Tariff Information Survey I-3 entitled "Countable Cotton Cloths." They were originally intended for inclusion therein but were omitted in order to expedite the printing of that report for the use of the Committee on Ways and Means. In the original manuscript form these tables were used by that committee and also by the Finance Committee in their preparation of the tariff law. They have since been rounded out by the insertion of the rates of duty applicable under the act of 1922 and are printed in response to requests by the trade.

In the preparation of this report the Tariff Commission had the services of W. A. Graham Clark, special expert, and of others.

ONE HUNDRED IMPORTED COTTON CLOTHS.

There are shown herewith physical, price, and tariff data relating to 100 foreign cotton cloths selected, in 1920, as typical of imports in this line. In making the selections the Tariff Commission had the assistance of importers and customs examiners. Photographs of these cloths are appended.

Table 1 shows physical and price data. The physical data include the so-called "cloth particulars," that is, the width in inches, the weight (stated in linear yards per pound, in square yards per pound, and in ounces per square yard), the ends and picks per square inch, and the yarn number and ply of both warp and filling. There is also listed the total single threads per square inch; in cloths composed of single yarns only, the total is the sum of the ends and picks, but in cloths containing ply yarns these are separated into singles and the count is taken of the total singles. There is further shown the official average yarn number, obtained by considering the length of the yarn to be equal to the distance covered by it in the cloth in the condition as imported, except that all clipped threads are considered as continuous. The width in inches is multiplied by the linear yards per pound and by the total single threads per square inch, and the result divided by 840. This official average yarn number, which has been in continuous use for tariff purposes since October 3, 1913, is always somewhat coarser than the actual average yarn number by reason of its disregarding the amount (difficult of precise ascertainment) by which the actual length of yarn used exceeds the surface length of the cloth produced.[1] The physical data presented also show the finish given to the yarn or to the cloth; where no finish is stated after the yarn it was used in the grey (unbleached) state.

The 100 cotton cloths selected include 90 known to the customs as "countable cotton cloths," because the threads must be counted to ascertain the progressive rate of duty to be applied, and 10 special cloths, provided for eo nomine, dutiable without respect to the threads per square inch or to the average yarn number based thereon. The 90 countable cotton cloths are made up of 41 plain cloths (plain-woven, twill, or sateen fabrics) woven with grey yarns; 18 plain cloths in which dyed yarns are used; 16 cloths requiring the use of the dobby or the Jacquard attachment; 2 made with leno doups; 2 containing novelty yarns; 2 with effects produced by clipping floating threads; and 9 made on swivel or lappet looms. The 10 cotton cloths provided for eo nomine include coated cloths, filled cloths, waterproof cloths, cotton table damask, Jacquard figured upholstery cloths (light and

[1] The fact that the length of yarn used is more than the length of the cloth produced is due, of course, to the necessity of the two sets of interweaving yarns, warp and filling, bending out of their course in order to pass around each other.

heavy), and pile fabrics. The 100 samples selected, therefore, cover practically the full range of imported cotton cloths, both countable and eo nomine, and afford not only a perspective of the import trade in this line but also a basis for tariff contrasts.

The price columns in Table 1 show, for each cloth, prices taken from the invoices nearest to October 1, 1913, and May 1, 1920. The first may be taken as typical of normal pre-war prices, whereas the latter are peak prices. It is hardly probable that prices will recede to those obtaining before the war, or that they will in the immediate future exceed those attained at the height of the boom in the spring of 1920. These two price levels were selected as the limits between which prices will probably fluctuate under the act of 1922 and therefore as well adapted to bring out the fluctuations in the relative duty levels under different acts. Owing to the differences in methods of adjustment of duties under the last three tariff acts, which, when measured on any common basis such as the ratio of the duty to the invoice value, cause the relative heights of the duty to vary irregularly with price changes, a fairer contrast can be obtained by using two price limits than by taking the prices of any particular day in 1923 or other year. Prices on cotton cloth invoices are usually stated on the basis of the linear yard; these are shown in Table 1 with the foreign currency converted to American currency at the ruling rates of exchange; there are also given the equivalent prices per square yard and per pound.

Table 2 brings out the relative height of tariff duties, stated in terms of cents per pound and also in ad valorem terms, under the acts of 1909, 1913, and 1922, based first on the normal price level of October 1, 1913, and second on the peak price level of May 1, 1920.

Under the act of 1922, countable cotton cloths are dutiable under progressive specific rates of duty, with progressive ad valorem minimums, and with a flat maximum of 45 per cent ad valorem. A study of the rates of the act of 1922 given in Table 2 shows that if the pre-war (1913) prices were in force now (1923), 28 of the 90 countable cloths would be dutiable under the specific rates, 38 under the minimum ad valorem rates, and 24 at the maximum of 45 per cent ad valorem. If the peak prices of May 1, 1920, were in force now, none of the 90 cloths would be dutiable under the specific rates, 82 would be dutiable under the minimum ad valorem rates, and 8 at the maximum of 45 per cent ad valorem. Prices in the spring of 1923 were approximately halfway between the 1913 and 1920 quotations, and less than a fourth of the imports of countable cotton cloths were dutiable under the specific rates of duty, the great bulk being dutiable under the progressive minimum ad valorem rates.

As shown by Table 2, the average rates of duty, on the 100 selected cloths, under the tariff acts of 1909, 1913, and 1922, vary according to the price level used.

Contrast of equivalent ad valorem rates of duty.

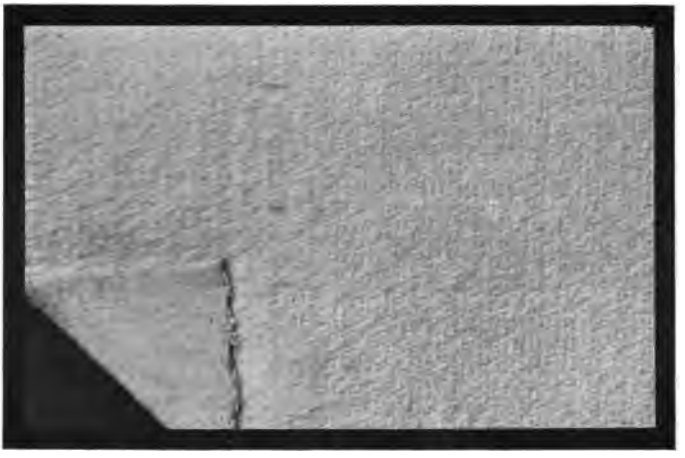
Tariff act.	Average duties, using 1913 prices.			Average duties, using 1920 prices.		
	90 countable cloths.	10 eo nomine cloths.	Total, 100 cloths.	90 countable cloths.	10 eo nomine cloths.	Total, 100 cloths.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
1909	44.82	53.22	45.76	37.26	35.13	37.05
1913	21.92	30.50	22.78	21.92	30.50	22.78
1922	33.31	49.23	38.23	29.34	36.40	32.98

Analysis of the above, so far as the 90 countable cotton cloths are concerned, shows that the rates of the act of 1922 are approximately halfway between the rates of the acts of 1913 and 1909. If based on 1913 prices, the rates under the present act are 51.5 per cent higher than those of the act of 1913 and 25.9 per cent lower than those of the act of 1909; if based on 1920 peak prices, the rates under the present act are 33.9 per cent higher than those of the act of 1913 and 21.3 per cent lower than those of the act of 1909. In regard to cotton cloths provided for eo nomine, if based on 1913 prices, the rates under the present act are 61.4 per cent higher than those of the act of 1913 and 7.5 per cent lower than those of the act of 1909; if based on 1920 peak prices, the rates under the present act are 19.3 per cent higher than those of the act of 1913 and 3.6 per cent higher than those of the act of 1909. For the 100 cotton cloths, including both countable and eo nomine, it is seen that the average rates of duty under the acts of 1913, 1922, and 1909 bear the relation of 100, 168, and 200 if based on the low price level, and the relation of 100, 145, and 163 if based on the high price level.

These averages, taken from Table 2, are simple arithmetical averages; as the relative quantities of the various cloths imported fluctuate from year to year it is not possible to weight them to complete the contrasts on the price levels taken. Import statistics, however, show that the rate of duty on countable cotton cloths imported during the operation of the act of 1909 averaged 42.30 per cent ad valorem, as against 21.42 per cent ad valorem for similar imports during the operation of the act of 1913. The rate of duty on all cotton cloths, countable and eo nomine, imported under the act of 1909 averaged 44.24 per cent ad valorem, as against 23.46 per cent ad valorem for similar inclusive imports under the act of 1913. Taking into consideration the fluctuating price levels during the years of operation of these acts, and the fact that the relative duty levels vary irregularly, not uniformly, according to price level variations, the average rates of duty during the entire periods of the acts of 1909 and 1913 are remarkably close to the average of the rates on the 100 cloths based on two price levels shown in Table 2. These figures tend to prove that the 100 cotton cloths selected are fairly representative of the range of imports in this line and that the contrast of tariff rates given in Table 2 may be taken as a closely approximate indication of the relative height of the cotton cloth duties that will obtain under the act of 1922 as compared with those under the acts of 1909 and 1913.

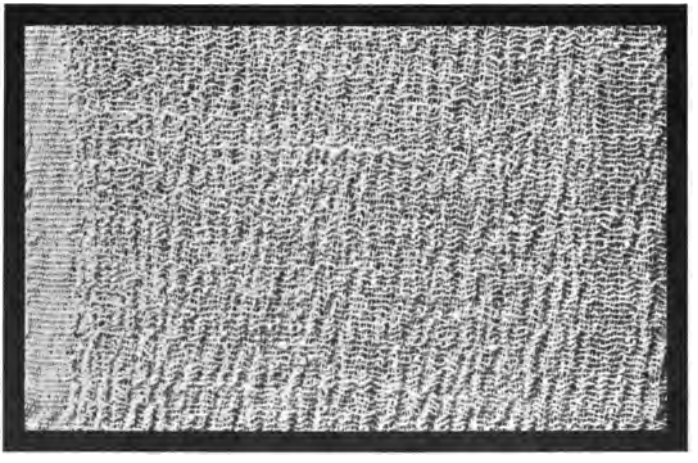
Sample No.	Invoice prices of about Oct. 1, 1913.			Invoice prices of about May 1, 1920.			Country of origin.	Sample No.
	Per linear yard.	Per square yard.	Per pound.[2]	Per linear yard.	Per square yard.	Per pound.[2]		
[illegible]	$0.079	$0.079	$0.3326	$0.3450	$0.3450	$1.4524	England	1
[illegible]	.084	.084	.3293	.3560	.3560	1.3955	do	2
[illegible]	.3450	.4140	.4037	1.8050	2.1660	2.1118	do	3
[illegible]	.2500	.2279	.8775	1.0330	.9416	3.6258	France	4
[illegible]	.0796	.0796	.3136	.2945	.2945	1.1603	England	5
[illegible]	.1375	.1650	.7315	.3250	.3900	1.7290	Japan	6
[illegible]	.0576	.0910	.4228	.7240	1.1455	5.3142	England	7
[illegible]	.0532	.0532	.3187	.2471	.2471	1.4801	do	8
[illegible]	.1320	.1485	.6090	.6080	.6840	3.0400	do	9
[illegible]	.6080	.4053	.9667	1.1350	.7567	1.8046	do	10
[illegible]	.1010	.1173	.5515	.4060	.4715	2.2168	do	11
[illegible]	.1500	.1350	1.3500	.355	.3195	3.1950	do	12
[illegible]ed	.1720	.1588	.7688	.923	.8520	4.1258	do	13
[illegible]	.0730	.0496	.4300	.289	.1963	1.7022	do	14
[illegible]nered	.2530	.2846	.8653	1.419	1.5965	4.8530	do	15
[illegible]	.0960	.0658	.5011	.487	.3339	2.5421	do	16
[illegible]	.1750	.1750	.6510	.700	.700	2.6040	do	17
[illegible]	.0518	.0518	.4735	.2471	.2471	2.2585	do	18
[illegible]	.1700	.1457	1.3175	.360	.3086	2.7900	do	19
[illegible]ered	.1582	.1460	.9729	.593	.5475	3.6469	do	20
[illegible]	.4500	.3000	1.1160	1.338	.8921	3.3182	do	21
[illegible]	.1270	.1236	.9411	.674	.6558	4.9943	do	22
[illegible]	.1290	.1093	.9443	.548	.4642	4.0114	do	23
[illegible]	.2400	.2274	2.3424	.610	.5780	5.9536	Switzerland	24
[illegible]	.1520	.1440	1.7054	.447	.4235	5.0153	England	25
[illegible]	.2500	.2308	1.9925	.649	.5990	5.1725	do	26
[illegible]	.0900	.1157	1.5435	.258	.3317	4.4247	do	27
[illegible]	.2500	.2023	2.8100	.700	.5663	7.8680	Switzerland	28
[illegible]	.2100	.1662	1.6611	.800	.6330	6.3280	England	29
[illegible]	.1350	.1350	1.4404	.289	.2890	3.0836	do	30
[illegible]	.1760	.1625	1.2373	.675	.6231	4.7452	Switzerland	31
[illegible]	.1180	.0965	1.1883	.380	.3108	3.8266	do	32
[illegible]	.2200	.1685	2.5674	.600	.4596	7.0020	France	33
[illegible]	.1500	.1421	1.3215	.639	.6053	5.6296	England	34
[illegible]	.1450	.1135	1.3978	.362	.2833	3.4897	Switzerland	35
[illegible]	.2500	.1731	2.3075	.441	.3053	4.0704	do	36
[illegible]	.0910	.0819	1.0920	.319	.2872	3.8280	England	37
[illegible]	.2230	.1867	2.0605	.777	.6505	7.1795	France	38
[illegible]	.1700	.1360	2.1760	.470	.3760	6.0160	Switzerland	39
[illegible]	.2000	.1321	1.7620	.880	.5813	7.7528	do	40
[illegible]	.1650	.1320	3.5211	.480	.3840	10.2432	do	41
[illegible]	.1500	.1800	.6315	.350	.4200	1.4735	Japan	42
[illegible]	.0988	.1147	.3399	.5535	.6428	1.9040	England	43
[illegible]	.1620	.1620	.6820	.360	.360	1.5156	do	44
[illegible]	.1320	.1485	.4897	.311	.3499	1.1538	do	45
[illegible]	.1620	.1620	.8635	.395	.395	2.1053	do	46
[illegible]	.1000	.1162	.5710	.304	.353	1.7358	do	47
[illegible]	.1140	.1164	.4708	.4307	.4399	1.7788	Holland	48
[illegible]	.1620	.1881	.9412	.339	.3937	1.9696	England	49
[illegible]	.1050	.1200	.7245	.350	.400	2.4150	do	50
[illegible]	.1010	.1136	.5121	.406	.4567	2.0584	do	51
[illegible]	.1150	.1335	.7118	.324	.3763	2.0056	do	52
[illegible]	.1320	.1485	.9134	.426	.4792	2.9479	do	53
[illegible]	.1250	.1607	.9888	.400	.5143	3.1640	do	54
[illegible]	.1670	.1879	1.1323	.699	.7864	4.7392	Scotland	55
[illegible]	.1930	.2171	1.2391	.689	.7751	4.4230	do	56
[illegible]	.4240	.2827	.8692	1.338	.8920	2.7429	England	57
[illegible]	.2500	.2500	2.2225	.940	.940	8.3566	France	58
[illegible]	.7600	.8826	4.4536	.970	1.1265	5.6842	England	59

Sample No.	Trade name of cloth.	ities, using maximum invoice price of 1920. ct of 3, per und.	Act of 1922, per pound.	Act of 1909, per cent of invoice price.	Act of 1913, per cent of invoice price.	Act of 1922, per cent of invoice price.	Sample No.
	Plain cloths, woven with unbleached yarns.						
1	Domet coffin lining	.1816	[1] $0.2396	[1] 25.00	12.50	[1] 16.50	1
2	Linen substitute	.1744	[1] .2442	[1] 35.00	12.50	[1] 17.50	2
3	Moleskin (6-harness filling sateen)	.2640	[1] .3696	[1] 40.00	12.50	[1] 17.50	3
4	Crêpe	.4532	[1] .6345	[1] 35 00	12.50	[1] 17.50	4
5	Tension rep	.1450	[1] .2429	[1] 35.20	12.50	[1] 20.9375	5
6	Japanese crêpe	.2594	[1] .3728	[1] 35.00	15.00	[1] 21.5625	6
7	Penelope canvas	.7971	[1] 1.0363	[1] 25.00	15.00	[1] 19.50	7
8	Longcloth	.2220	[1] .3108	[1] 35.00	15.00	[1] 21.00	8
9	Shirting	.4560	[1] .7980	[1] 40.00	15.00	[1] 26.25	9
10	Coutil (herring-bone twill)	.2707	[1] .4105	[1] 40.00	15.00	[1] 22.75	10
11	Corded shirting	.4434	[1] .5487	[1] 40.00	20.00	[1] 24.75	11
12	Single voile	.6390	[1] .7189	[1] 30.00	20.00	[1] 22.50	12
13	Sleeve lining (5-harness warp sateen)	.9283	[1] 1.2764	[1] 40.00	22.50	[1] 30.9375	13
14	Embroidery muslin (center selvage)	.3404	[1] .4043	[1] 30.00	20.00	[1] 23.75	14
15	Venetian (8-harness warp sateen)	.0919	[1] 2.0474	[1] 40.00	22.50	[1] 42.1875	15
16	Cambric	.5084	[1] .6164	[1] 35.00	20.00	[1] 24.25	16
17	Matte shirting	.6510	[1] .7356	[1] 36.43	25.00	[1] 28.25	17
18	Cambric	.5646	[1] .6550	[1] 35.00	25.00	[1] 29.00	18
19	Semi-voile	.6278	[1] .7603	[1] 35.00	22.50	[1] 27.25	19
20	Warp sateen (5-harness)	.9117	[1] 1.1579	[1] 41.83	25.00	[1] 31.75	20
21	Poplin	.8295	[1] 1.2962	[1] 41.16	25.00	[1] 39.0625	21
22	Typewriter cambric	1.3734	[1] 1.6482	[1] 40.00	27.50	[1] 33.00	22
23	Ply voile	1.0029	[1] 1.2034	[1] 30.00	25.00	[1] 30.00	23
24	Lawn	1.6372	[1] 2.3814	[1] 40.00	27.50	[1] 40.00	24
25	Semi-voile	1.3792	[1] 2.0061	[1] 35.00	27.50	[1] 40.00	25
26	Ply voile	1.4224	[1] 2.0690	[1] 35.00	27.50	[1] 40.00	26
27	Dimity	1.2168	[1] 1.7699	[1] 40.00	27.50	[1] 40.00	27
28	Transparent organdy	2.1637	[1] 3.1472	[1] 40.00	27.50	[1] 40.00	28
29	Ply voile	1.7402	[1] 2.0882	[1] 35.00	27.50	[1] 33.00	29
30	Sheer nainsook	.8480	[1] 1.0176	[1] 40.00	27.50	[1] 33.00	30
31	Typewriter cambric	1.1863	[1] 1.4235	[1] 40.00	25.00	[1] 30.00	31
32	Cotton mull	1.0523	[1] 1.2628	[1] 38.23	27.50	[1] 33.00	32
33	French lawn	2.1006	[1] 2.3107	[1] 35.00	30.00	[1] 33.00	33
34	Ply voile	1.6889	[1] 2.2518	[1] 35.00	30.00	[1] 40.00	34
35	Batiste	1.0469	[1] 1.1516	[1] 38.83	30.00	[1] 33.00	35
36	Transparent organdy	1.2211	[1] 1.3432	[1] 35.00	30.00	[1] 33.00	36
37	Muslin	1.0527	[1] 1.1484	[1] 35.00	27.50	[1] 30.00	37
38	Ply voile	2.1539	[1] 2.3692	[1] 35.00	30.00	[1] 33.00	38
39	Transparent organdy	1.8048	[1] 1.9853	[1] 35.00	30.00	[1] 33.00	39
40	Ply voile	2.3258	[1] 2.5584	[1] 35.00	30.00	[1] 33.00	40
41	Chiffon mull	3.0730	[1] 4.0973	[1] 42.61	30.00	[1] 40.00	41
	Plain cloths, woven with dyed yarns.						
42	Japanese crêpe	.1842	[1] .3085	[1] 35.00	12.50	[1] 20.9375	42
43	Striped flannelet (twill)	.2856	[1] .4046	[1] 40.00	15.00	[1] 21.25	43
44	Tartan plaid (twill)	.2273	[1] .4026	[1] 35.00	15.00	[1] 26.5625	44
45	Striped ticking	.1731	[1] .3058	[1] 40.00	15.00	[1] 26.50	45
46	Tartan plaid (twill)	.3158	[1] .5987	[1] 35.00	15.00	[1] 28.4375	46
47	Gingham check	.2604	[1] .4990	[1] 35.00	15.00	[1] 28.75	47
48	Nankin ticking	.2668	[1] .4224	[1] 40.00	15.00	[1] 23.75	48
49	Shepherd check (twill)	.2954	[1] .5724	[1] 35.00	15.00	[1] 29.0625	49
50	Plaid gingham	.3623	[1] .7245	[1] 35.00	15.00	[1] 30.00	50
51	Corded shirting, striped	.3088	[1] .5210	[1] 40.00	15.00	[1] 25.3125	51
52	Striped shirting	.3008	[1] .5390	[1] 40.00	15.00	[1] 26.8750	52
53	Fancy gingham check	.4422	[1] .9487	[1] 35.00	15.00	[1] 32.1875	53
54	Solid-color gingham	.6328	[1] 1.0065	[1] 40.00	20.00	[1] 31.8125	54
55	Striped shirting	.9478	[1] 1.3921	[1] 40.00	20.00	[1] 29.3750	55
56	Fine plaid gingham	.8846	[1] 1.5204	[1] 40.00	20.00	[1] 34.3750	56
57	Poplin, striped	.6172	[1] .9172	[1] 41.12	22.50	[1] 33.4375	57
58	Warp-print crêpe voile	2.2981	[1] 3.3426	[1] 35.00	27.50	[1] 40.00	58
59	Fine shirting poplin, striped	1.5632	[1] 2.2737	[1] 40.89	27.50	[1] 40.00	59



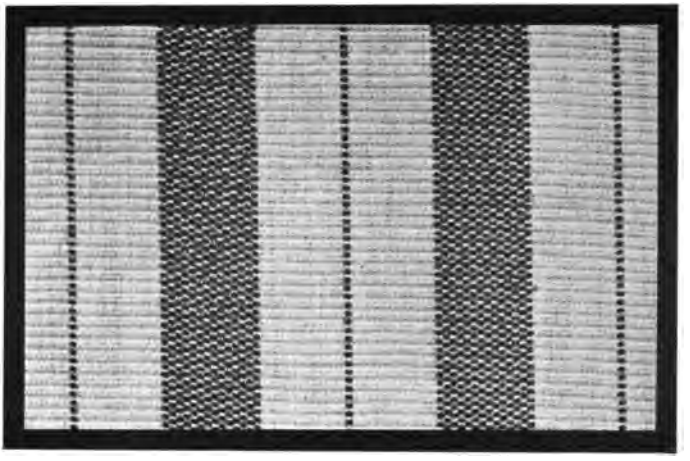
SAMPLE NO. 3.—MOLESKIN.

Filling sateen (6-harness). Finished width, 30 inches.
67 ends and 284 picks per square inch, finished.
Warp yarn, 29/2. Filling yarn, 18s.
Weight, 1.17 linear yards (0.98 square yard) per pound, finished.
Bleached and napped.



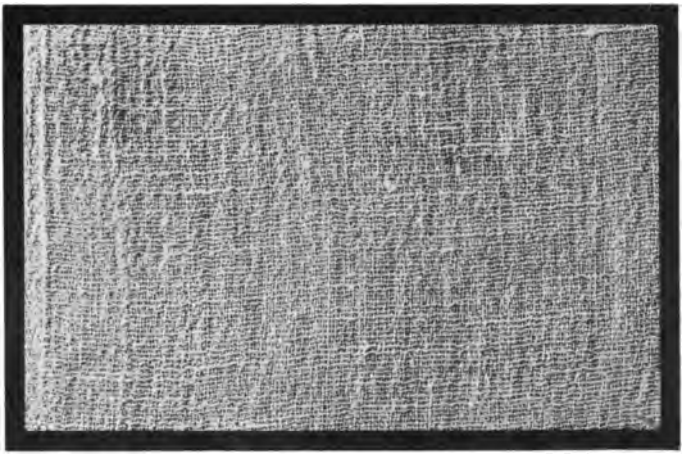
SAMPLE NO. 4.—CRÊPE.

Plain woven. Finished width, 39½ inches.
71 ends and 35 picks per square inch, finished.
Warp yarn, 40s. Filling yarn, hard twisted 13s.
Weight, 3.51 linear yards (3.85 square yards) per pound, finished.
Bleached.



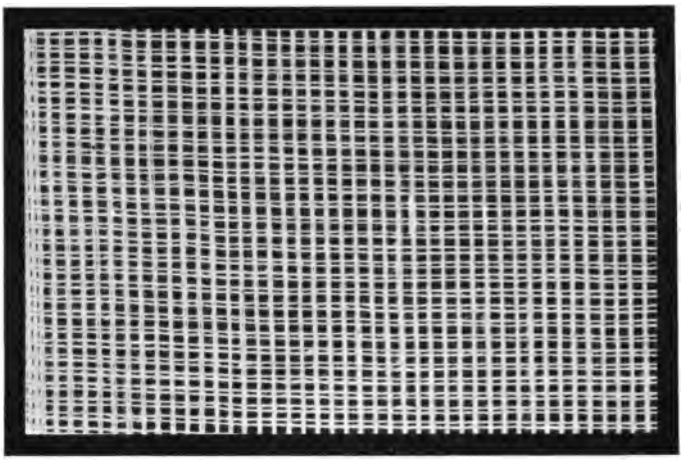
SAMPLE NO. 5.—TENSION REP.

Plain woven with two beams. Finished width, 36 inches.
79 ends and 34 picks per square inch, finished.
Warp yarn, 26s. Filling yarn, 15s.
Weight, 3.94 linear yards (3.94 square yards) per pound, finished.
Bleached and printed.



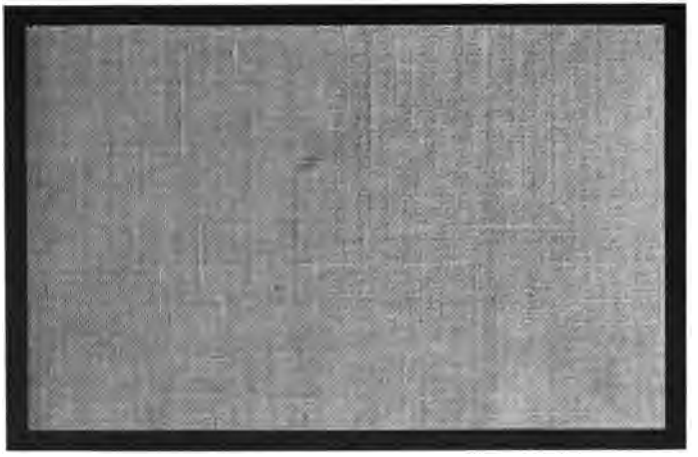
SAMPLE NO. 6.—JAPANESE CRÊPE.

Plain woven. Finished width, 30 inches.
66 warp ends and 43 picks per square inch, finished.
Warp yarn, 32s. Filling yarn, hard twisted 19s.
Weight, 5.32 linear yards (4.43 square yards) per pound, finished.
Piece-dyed orange.



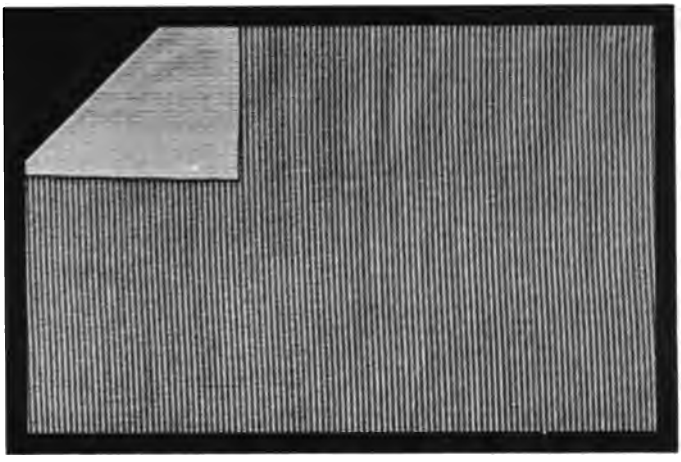
SAMPLE NO. 7.—PENELOPE CANVAS.

Plain woven with square open mesh. Finished width, 22¾ inches.
27 ends and 27 picks per square inch, finished.
Warp yarn, 27/2. Filling yarn, 27/2.
Weight, 7.34 linear yards (4.64 square yards) per pound, finished.
Bleached and stiffened.



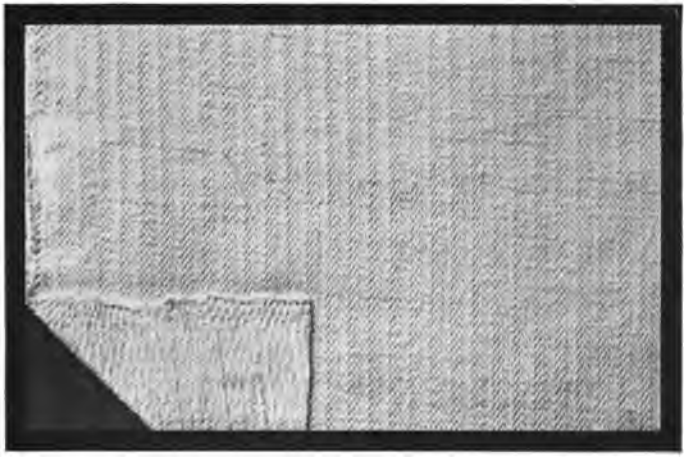
SAMPLE NO. 8.—LONG CLOTH.

Plain woven. Finished width, 36 inches.
65 ends and 61 picks per square inch, finished.
Warp yarn, 35s. Filling yarn, 43s.
Weight, 5.99 linear yards (5.99 square yards) per pound, finished.
Bleached.



SAMPLE NO. 9.—PRINTED SHIRTING.

Plain woven. Finished width, 32 inches.
93 ends and 94 picks per square inch, finished.
Warp yarn, 37s. Filling yarn, 43s.
Weight, 5 linear yards (4.44 square yards) per pound, finished.
Bleached and printed.

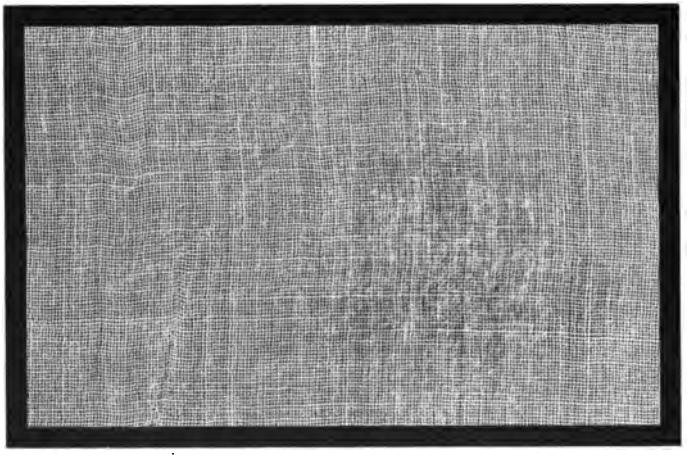


SAMPLE NO. 10.—COUTIL OR CORSET CLOTH.

Herring bone twill. Finished width, 54 inches.
140 ends and 99 picks per square inch, finished.
Warp yarn, 62/2 bleached. Filling yarn, 24s bleached.
Weight, 1.59 linear yards (2.38 square yards) per pound, finished.
Calendered.

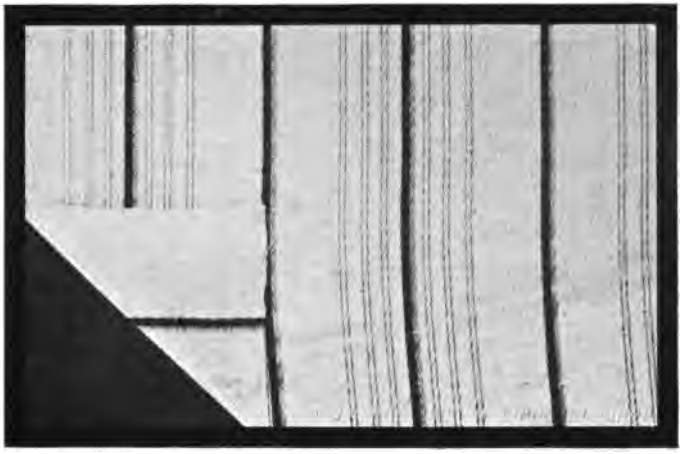
SAMPLE NO. 11.—CORDED SHIRTING.

Plain woven. Finished width, 31 inches.
118 ends and 96 picks per square inch, finished.
Warp yarn, 55s. Warp cord, 22/4. Filling yarn, 64s.
Weight, 5.46 linear yards (4.70 square yards) per pound, finished.
Bleached.



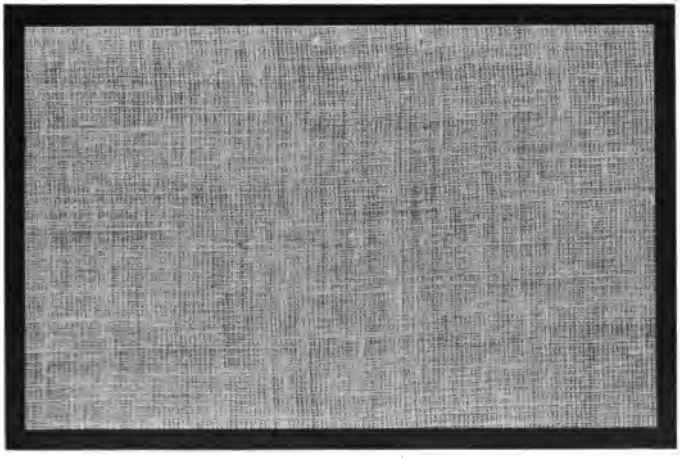
SAMPLE NO. 12.—SINGLE VOILE.

Plain woven. Grey width, 40 inches.
60 ends and 57 picks per square inch, in the grey.
Warp yarn, 53s, hard twisted. Filling yarn, 54s, hard twisted.
Weight, 9 linear yards (10 square yards) per pound, in the grey.
Unbleached.



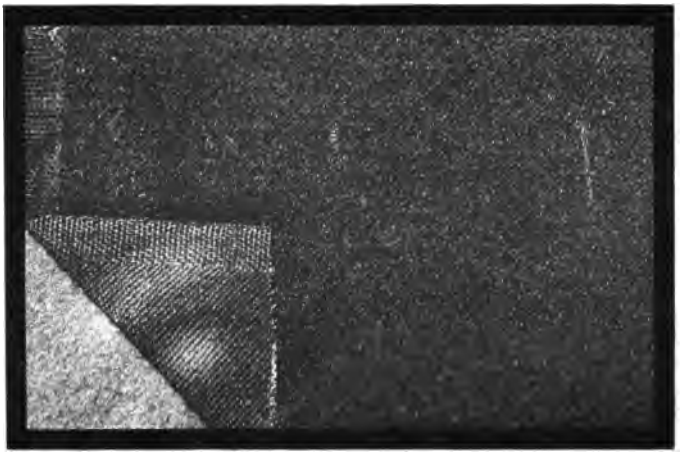
SAMPLE NO. 13.—SLEEVE LINING.

Warp sateen (5-harness). Finished width, 39 inches.
160 ends and 84 picks per square inch, finished.
Warp yarn, 57s. Filling yarn, 47s.
Weight, 4.47 linear yards (4.84 square yards) per pound, finished.
Piece-dyed, mercerized, and printed.



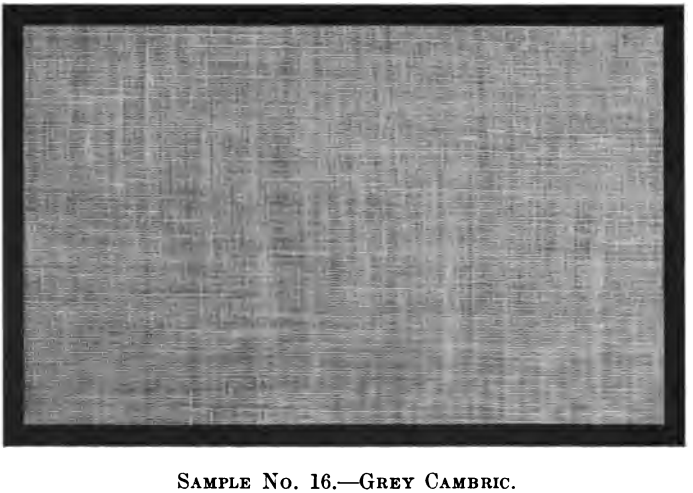
SAMPLE NO. 14.—EMBROIDERY MUSLIN.

Plain woven, with center selvage for splitting. Grey width, 53 inches.
83 ends and 65 picks per square inch, in the grey.
Warp yarn, 54s. Filling yarn, 66s.
Weight, 5.89 linear yards (8.67 square yards) per pound, in grey.
Unbleached.



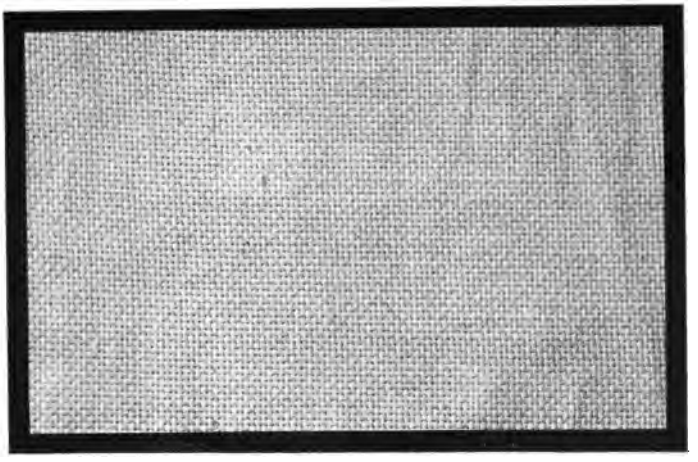
SAMPLE NO. 15.—VENETIAN LINING.

Warp sateen (8-harness). Finished width, 32 inches.
172 ends and 74 picks per square inch, finished.
Warp yarn, 80/2. Filling yarn, 26s.
Weight, 3.42 linear yards (3.04 square yards) per pound, finished.
Piece-dyed, mercerized, and schreinered. Marquis de Luxe finish.



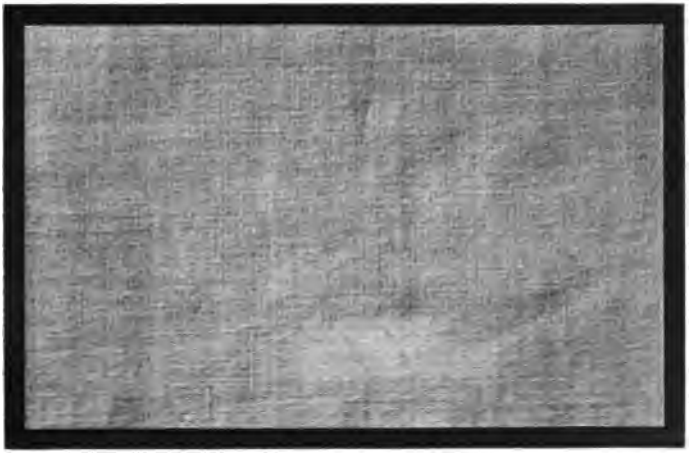
SAMPLE NO. 16.—GREY CAMBRIC.

Plain woven. Grey width, 52½ inches.
93 ends and 83 picks per square inch, in the grey.
Warp yarn, 54s. Filling yarn, 64s.
Weight, 5.22 linear yards (7.61 square yards) per pound, in the grey.
Unbleached.



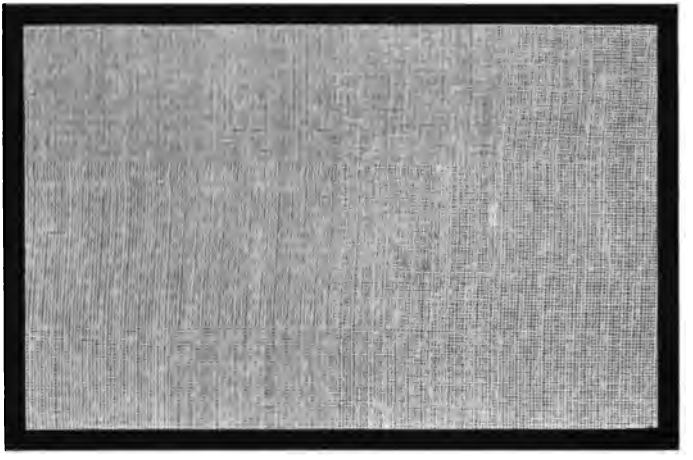
SAMPLE NO. 17.—MATTE SHIRTING.

Plain basket weave. Finished width, 36 inches.
132 ends and 60 picks per square inch, finished.
Warp yarn, 84/2. Filling yarn, 41/2.
Weight, 3.72 linear yards (3.72 square yards) per pound, finished.
Bleached and mercerized.



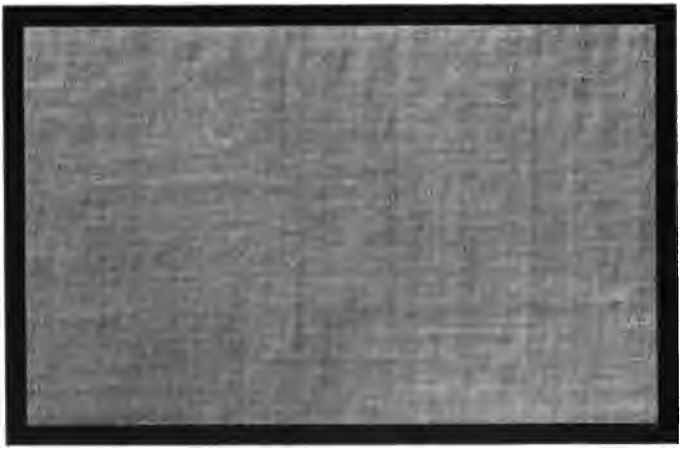
SAMPLE NO. 18.—CAMBRIC.

Plain woven. Finished width, 36 inches.
95 ends and 68 picks per square inch, finished.
Warp yarn, 66s. Filling yarn, 69s.
Weight, 9.14 linear yards (9.14 square yards) per pound, finished.
Bleached.



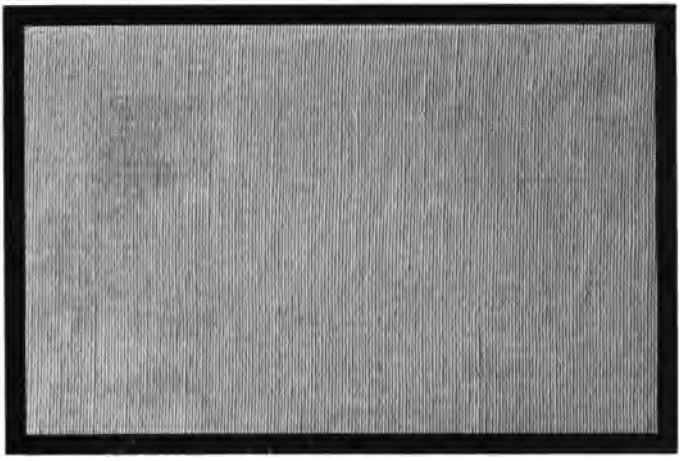
SAMPLE NO. 19.—SEMI-VOILE.

Plain woven. Grey width, 42 inches.
57 ends and 60 picks per square inch, in the grey.
Warp yarn, 47s, hard twisted Filling yarn, 94/2, hard twisted.
Weight, 7.75 linear yards (9.04 square yards) per pound, in the grey.
Unbleached.



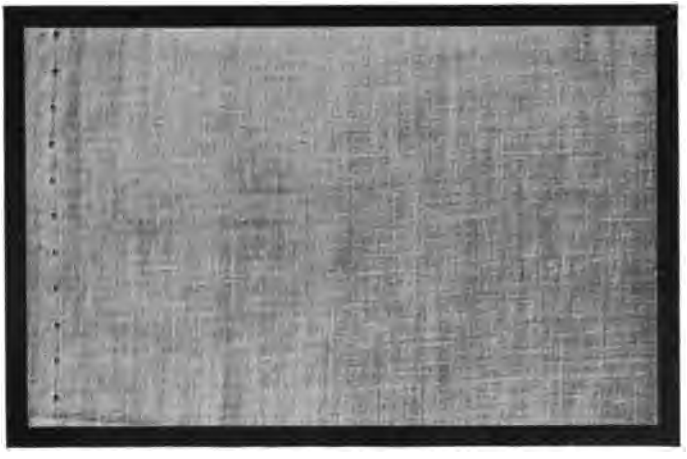
SAMPLE NO. 20.—SATEEN.

Warp sateen (5-harness). Finished width, 39 inches.
172 ends and 90 picks per square inch, finished.
Warp yarn, 77s. Filling yarn, 89s.
Weight, 6.15 linear yards (6.66 square yards) per pound, finished.
Bleached, mercerized, and schreinered.



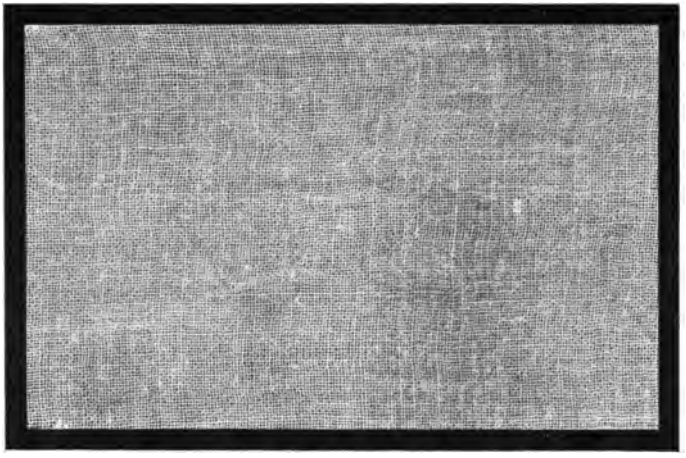
SAMPLE NO. 21.—POPLIN.

Plain woven. Finished width, 54 inches.
183 ends and 58 picks per square inch, finished.
Warp yarn, 87/2. Filling yarn, 67/2.
Weight, 2.48 linear yards (3.72 square yards) per pound, finished.
Bleached, piece-dyed, and mercerized.



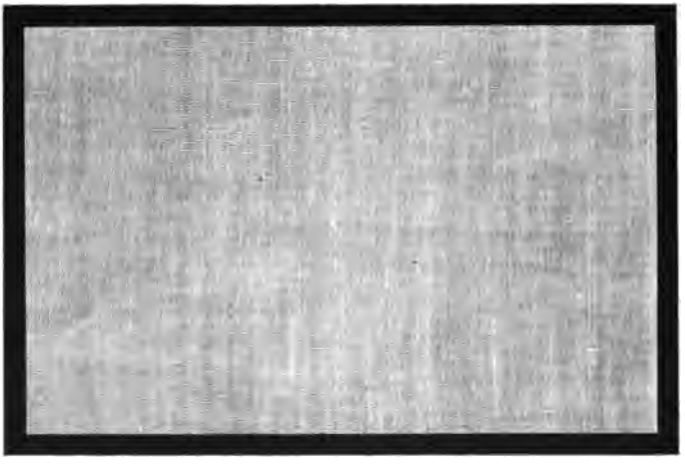
SAMPLE NO. 22.—TYPEWRITER CAMBRIC.

Plain woven. Finished width, 37 inches.
120 ends and 131 picks per square inch, finished.
Warp yarn, 78s. Filling yarn, 103s.
Weight, 7.41 linear yards (7.61 square yards) per pound, finished.
Bleached.



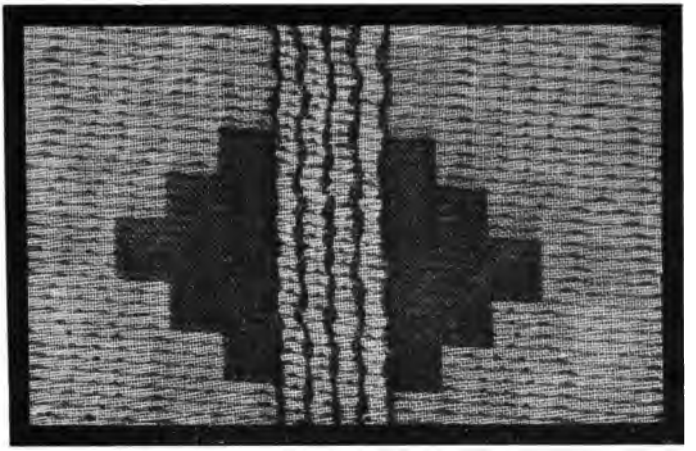
SAMPLE NO. 23.—PLY VOILE.

Plain woven. Grey width, 42½ inches.
59 ends and 57 picks per square inch, in the grey.
Warp yarn, 93/2, hard twisted. Filling yarn, 104/2, hard twisted.
Weight, 7.32 linear yards (8.64 square yards) per pound, in the grey.
Unbleached.



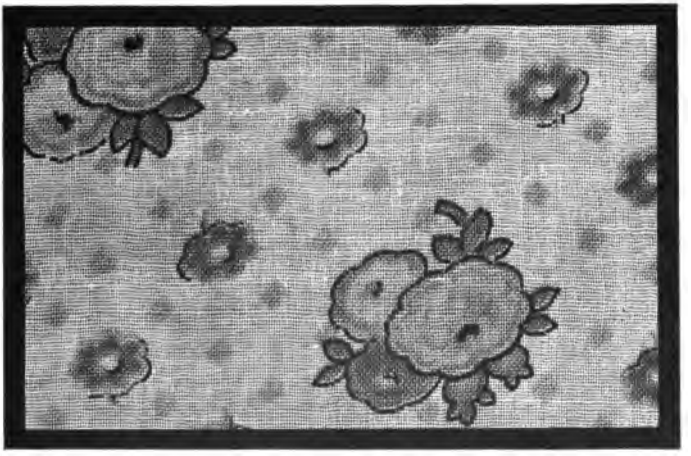
SAMPLE NO. 24.—LAWN.

Plain woven. Finished width, 38 inches.
107 ends and 93 picks per square inch, finished.
Warp yarn, 82s. Filling yarn, 100s.
Weight, 9.76 linear yards (10.30 square yards) per pound, finished.
Piece-dyed pink.



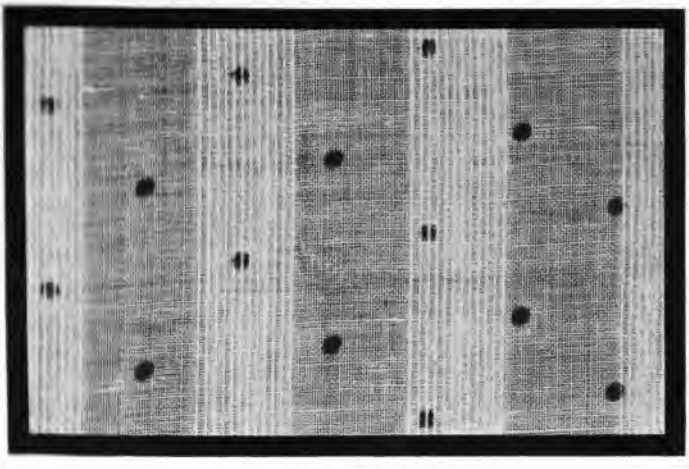
SAMPLE NO. 25.—SEMI-VOILE.

Plain woven. Finished width, 38 inches.
65 ends and 57 picks per square inch, finished.
Warp yarn, 80s, hard twisted. Filling yarn, 106/2, hard twisted.
Weight, 11.22 linear yards (11.84 square yards) per pound, finished.
Bleached, and printed (brown, lavender, and blue).



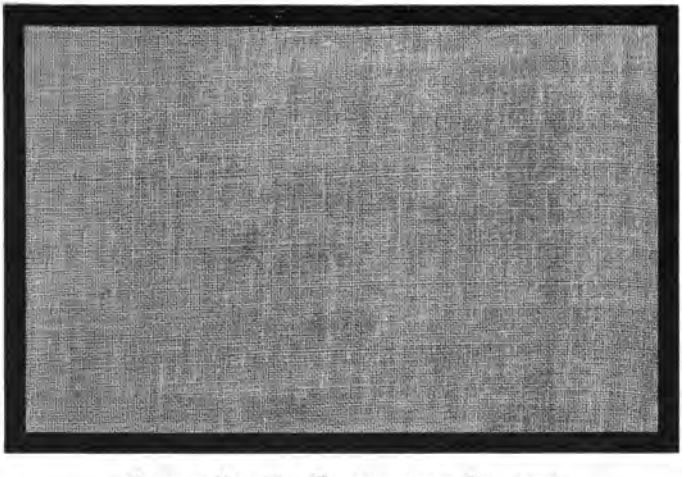
SAMPLE NO. 26.—PLY VOILE.

Plain woven. Finished width, 39 inches.
68 ends and 58 picks per square inch, finished.
Warp yarn, 102/2, hard twisted. Filling yarn, 94/2, hard twisted.
Weight, 7.97 linear yards (8.64 square yards) per pound, finished.
Bleached, and printed (pink, green, light green, yellow, black, and lavender).



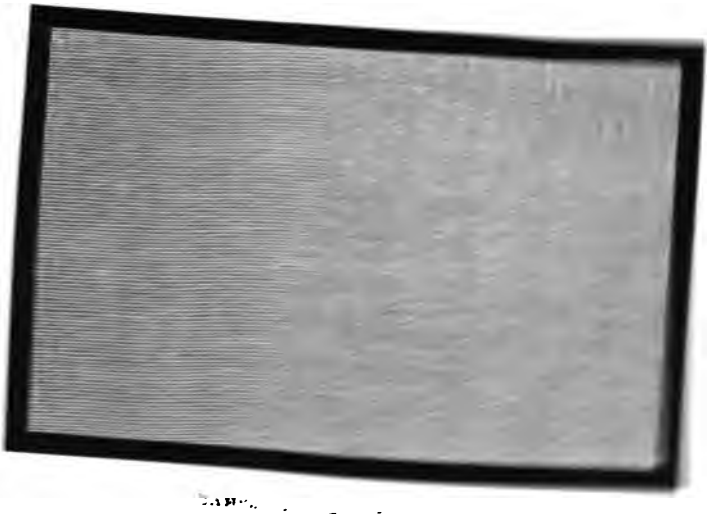
SAMPLE NO. 27.—DIMITY.

Plain woven. Finished width, 28 inches.
91 ends and 75 picks per square inch, finished.
Warp yarn, 85s (warp cords are formed by 3 ends of regular warp). Filling yarn, 132s.
Weight, 17.15 linear yards (13.33 square yards) per pound, finished.
Bleached, and printed with violet dots.



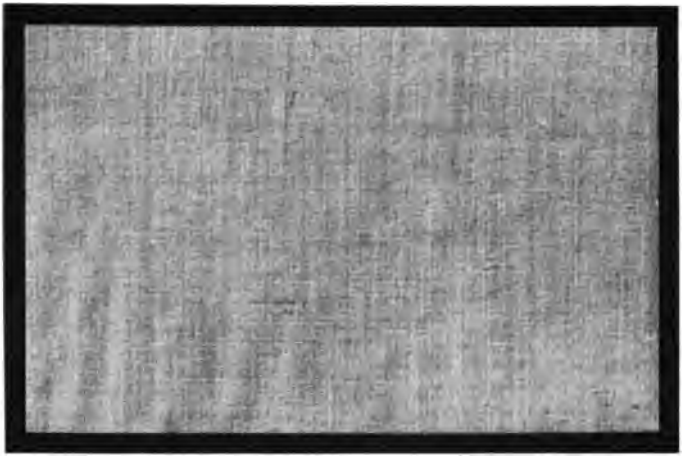
SAMPLE NO. 28.—TRANSPARENT ORGANDY.

Plain woven. Finished width, 44½ inches.
87 ends and 73 picks per square inch, finished.
Warp yarn, 86s. Filling yarn, 125s.
Weight, 11.24 linear yards (13.91 square yards) per pound, finished.
Piece-dyed pink. Permanent organdy finish.



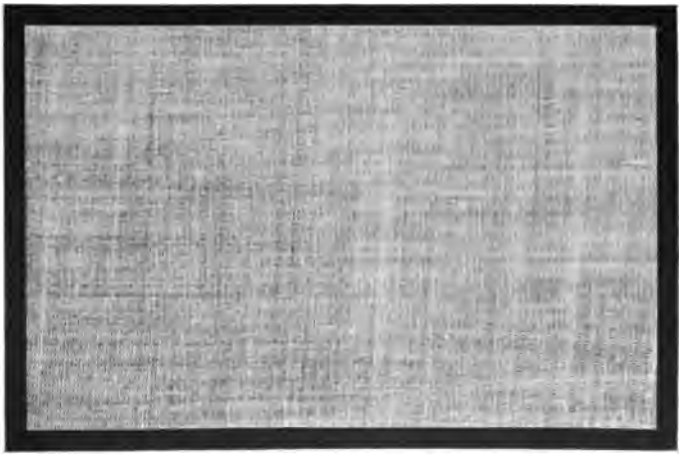
Plain woven.
60 ends and
Warp yarn
Weight
Bleached.

Plain woven.
110 ends and
Warp yarn.
Weight, 10.6
Bleached.



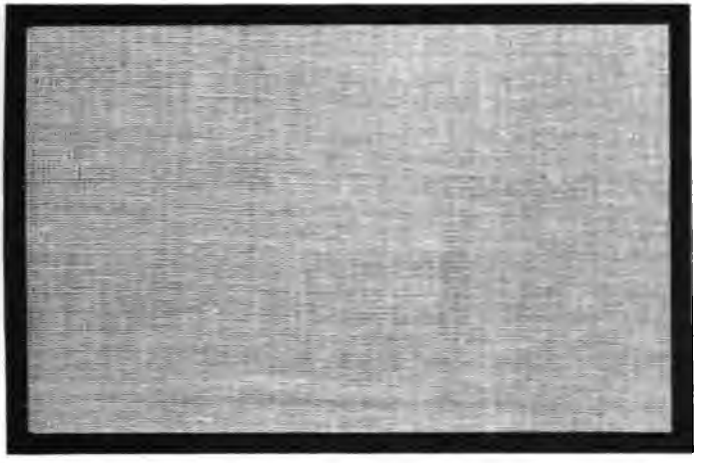
SAMPLE NO. 31.—TYPEWRITER CAMBRIC.

Plain woven. Grey width, 39 inches.
142 ends and 156 picks per square inch, in the grey.
Warp yarn, 90s. Filling yarn, 140s.
Weight, 7.03 linear yards (7.61 square yards) per pound, in the grey.
Unbleached.



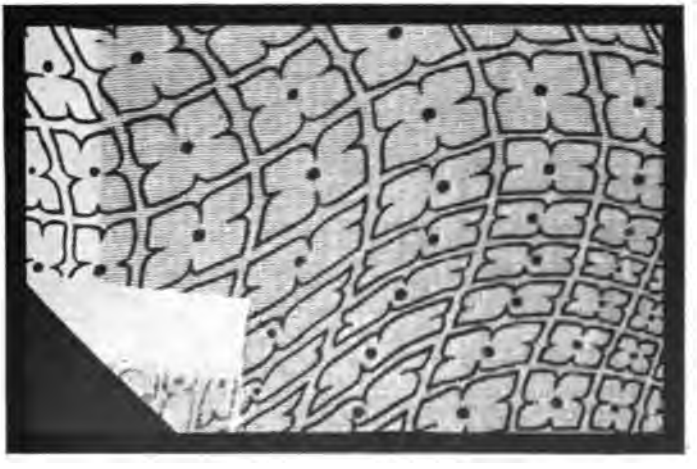
SAMPLE NO. 32.—COTTON MULL.

Plain woven. Finished width, 44 inches.
94 ends and 92 picks per square inch, finished.
Warp yarn, 87s. Filling yarn, 117s.
Weight, 10.07 linear yards (12.31 square yards) per pound, finished.
Bleached and mercerized.



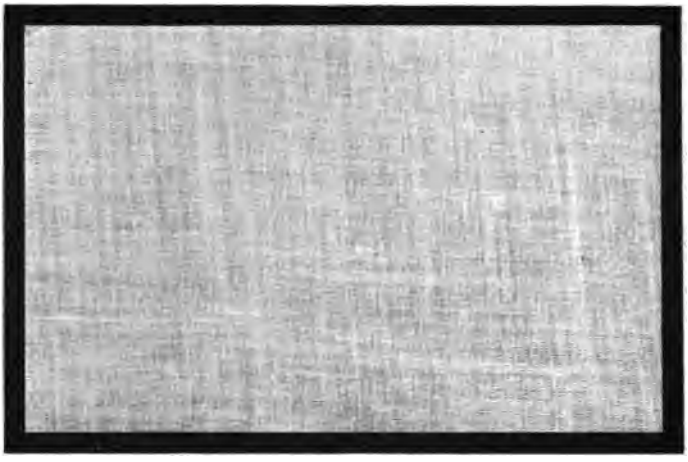
SAMPLE No. 33.—FRENCH LAWN.

Plain woven. Finished width, 47 inches.
78 ends and 76 picks per square inch, finished.
Warp yarn, 99s. Filling yarn, 107s.
Weight, 11.67 linear yards (15.24 square yards) per pound, finished.
Bleached.



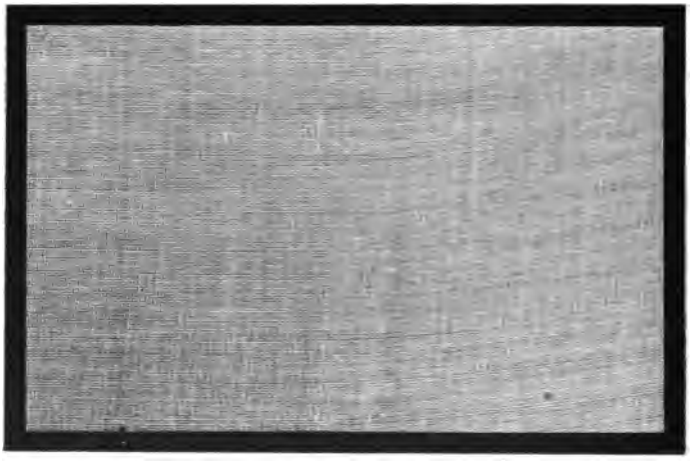
SAMPLE No. 34. PLY VOILE.

Plain woven. Finished width, 38 inches.
69 ends and 56 picks per square inch, finished.
Warp yarn, 110/2, hard twisted. Filling yarn, 110/2, hard twisted.
Weight, 8.81 linear yards (9.30 square yards) per pound, finished.
Bleached, and printed with a wavy blue design.



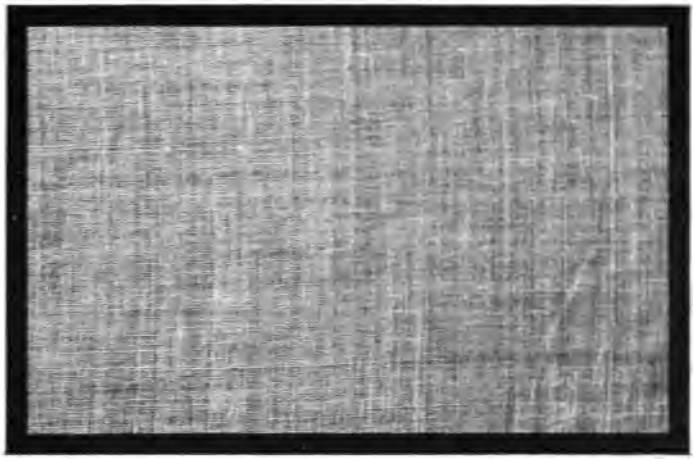
SAMPLE NO. 35.—BATISTE.

Plain woven. Finished width, 46 inches.
97 ends and 94 picks per square inch, finished.
Warp yarn, 88s. Filling yarn, 124s.
Weight, 9.64 linear yards (12.32 square yards) per pound, finished.
Bleached and mercerized.



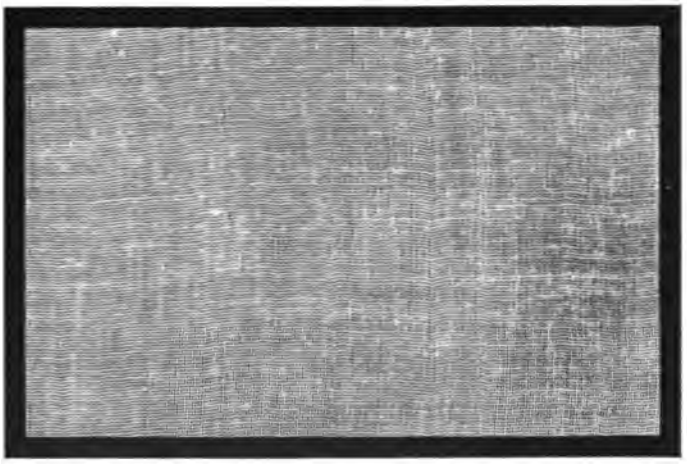
SAMPLE NO. 36.—TRANSPARENT ORGANDY.

Plain woven. Finished width, 52 inches.
91 ends and 85 picks per square inch, finished.
Warp yarn, 88s. Filling yarn, 128s.
Weight, 9.23 linear yards (13.33 square yards) per pound, finished.
Bleached. Permanent organdy finish.



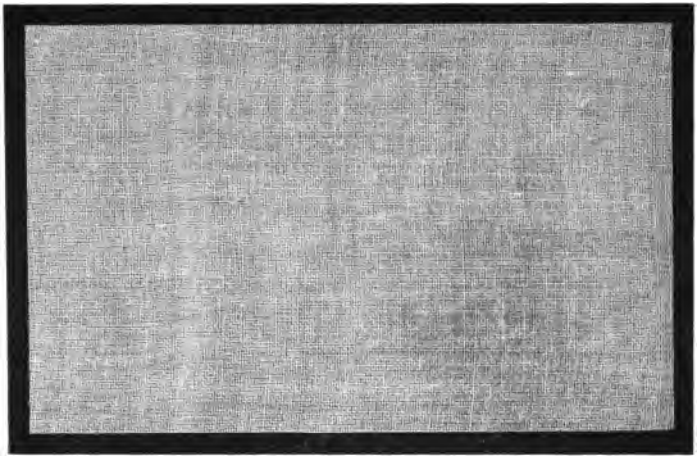
SAMPLE NO. 37.—MUSLIN.

Plain woven. Grey width, 40 inches.
100 ends and 85 picks per square inch, in the grey.
Warp yarn, 98s. Filling yarn, 132s.
Weight, 12 linear yards (13.33 square yards) per pound, in the grey.
Unbleached.



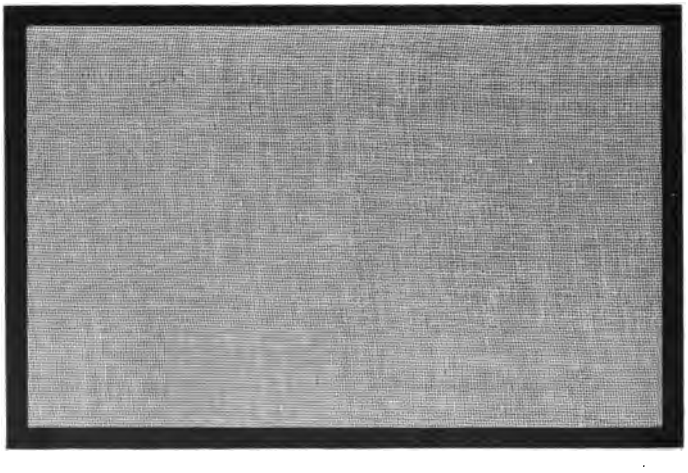
SAMPLE NO. 38.—PLY VOILE.

Plain woven. Finished width, 43 inches.
65 ends and 60 picks per square inch, finished.
Warp yarn, 138/2, hard twisted. Filling yarn, 114/2, hard twisted.
Weight, 9.24 linear yards (11.04 square yards) per pound, finished.
Bleached.



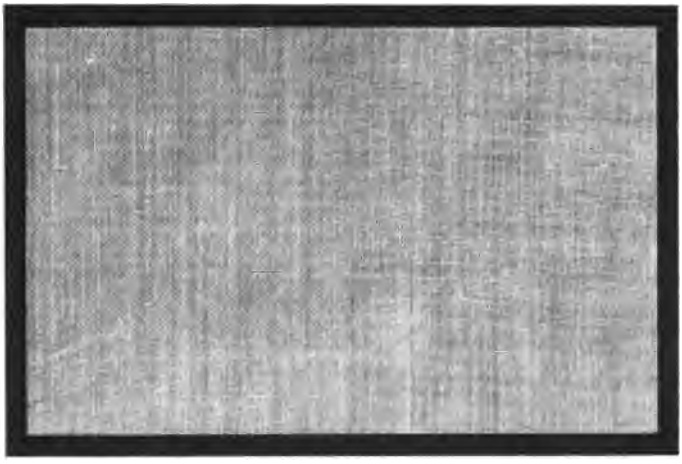
SAMPLE NO. 39.—TRANSPARENT ORGANDY.

Plain woven. Finished width, 45 inches.
90 ends and 87 picks per square inch, finished.
Warp yarn, 108s. Filling yarn, 146s.
Weight, 12.80 linear yards (16 square yards) per pound, finished.
Bleached. Permanent organdy finish.



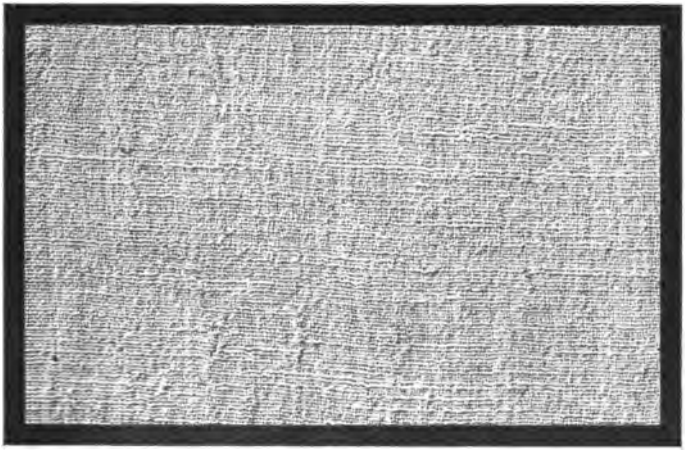
SAMPLE NO. 40.—PLY VOILE.

Plain woven. Finished width, 54½ inches.
68 ends and 61 picks per square inch, finished.
Warp yarn, 158/2, hard twisted. Filling yarn, 143/2, hard twisted.
Weight, 8.81 linear yards (13.33 square yards) per pound, finished.
Bleached.



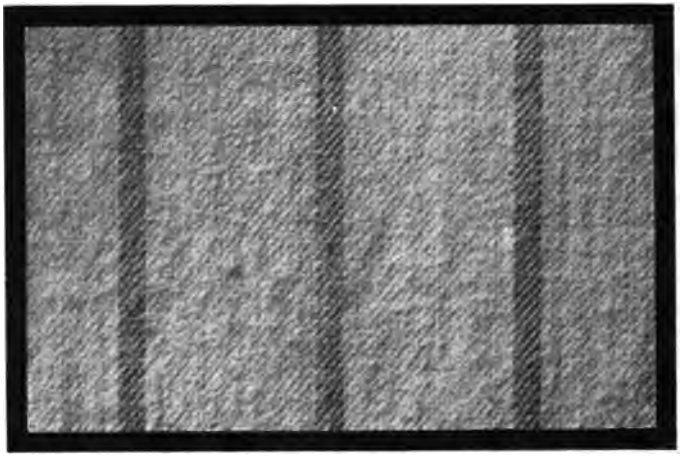
SAMPLE NO. 41.—CHIFFON MULL.

Plain woven. Finished width, 45 inches.
96 ends and 96 picks per square inch, finished.
Warp yarn, 230s. Filling yarn, 230s.
Weight, 21.34 linear yards (26.67 square yards) per pound, finished.
Piece-dyed ecru. Mercerized.



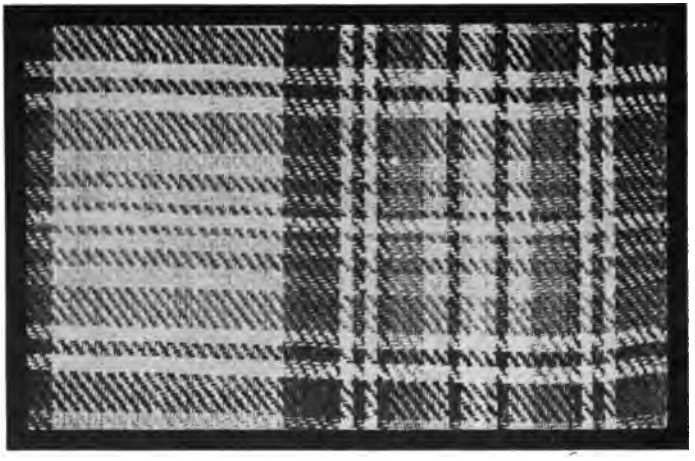
SAMPLE NO. 42.—JAPANESE CRÊPE.

Plain woven. Finished width, 30 inches.
76 ends and 52 picks per square inch, finished.
Warp yarn, 30s, dyed. Filling yarn, 18s, hard twisted, bleached.
Weight, 4.21 linear yards (3.52 square yards) per pound, finished.
Lavender warp and white filling.



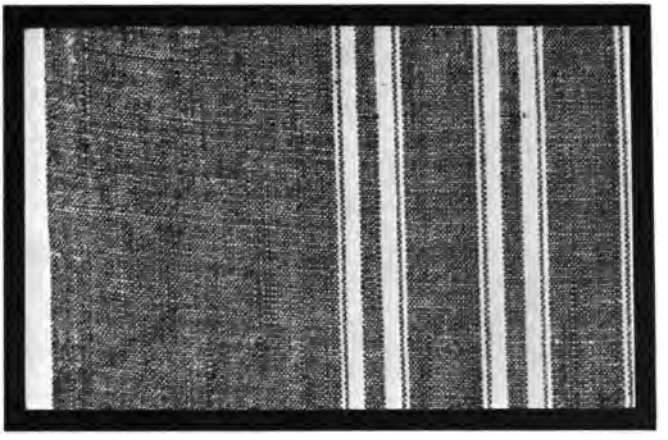
SAMPLE NO. 43.—STRIPED FLANNELET.

Twill woven (4-harness). Finished width, 31 inches.
84 ends and 70 picks per square inch, finished.
Warp yarn, 18s, dyed. Filling yarn, 28s, soft twisted, bleached.
Weight, 3.44 linear yards (2.96 square yards) per pound, finished.
Light blue warp with lavender stripes and white filling. Napped on both sides.



SAMPLE NO. 44.—TARTAN PLAID.

Twill woven (4-harness) on box loom. Finished width, 36 inches.
65 ends and 51 picks per square inch, finished.
Warp yarn, 21s, dyed, 21s, bleached. Filling yarn, 26s, dyed, 26s, bleached.
Weight, 4.21 linear yards (4.21 square yards) per pound, finished.
Green, yellow, black, white, and red warp; lavender, yellow, black, white, green, and red filling.

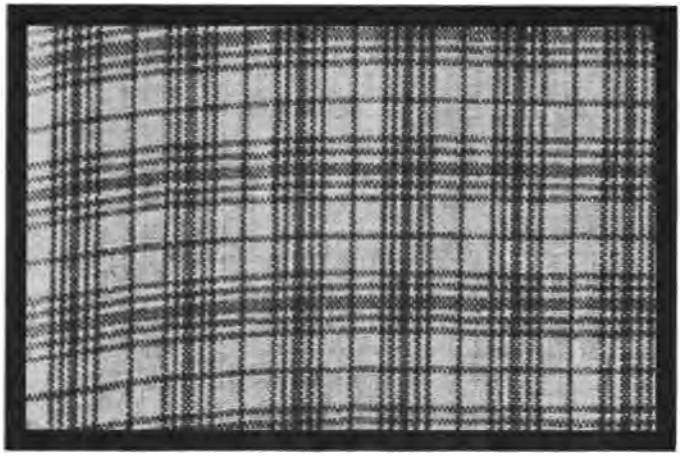


SAMPLE NO. 45.—STRIPED TICKING.

Plain woven. Finished width, 32 inches.
97 ends and 70 picks per square inch, finished.
Warp yarn, 24s, vat dyed, 24s bleached. Filling yarn, 33s, bleached.
Weight, 3.71 linear yards (3.30 square yards) per pound, finished.
Blue and white warp; white filling.

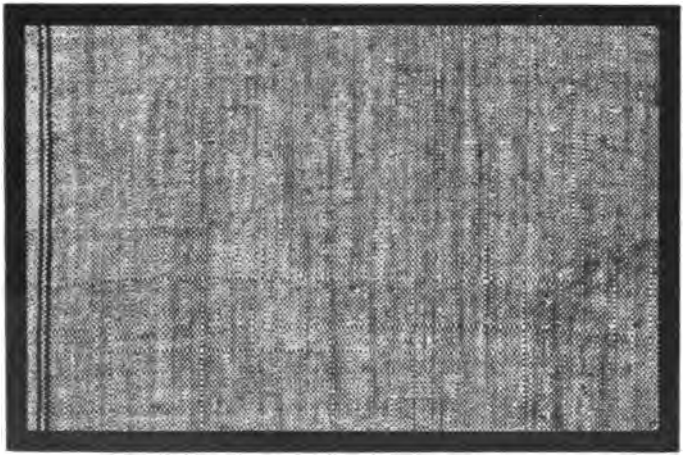
SAMPLE NO. 46.—TARTAN PLAID.

Twill woven (4-harness) on box loom. Finished width, 36 inches.
56 ends and 62 picks per square inch, finished.
Warp yarn, 32s, dyed. Filling yarn, 26s, dyed.
Weight, 5.33 linear yards (5.33 square yards) per pound, finished.
Red, black, blue, and green in both warp and filling.



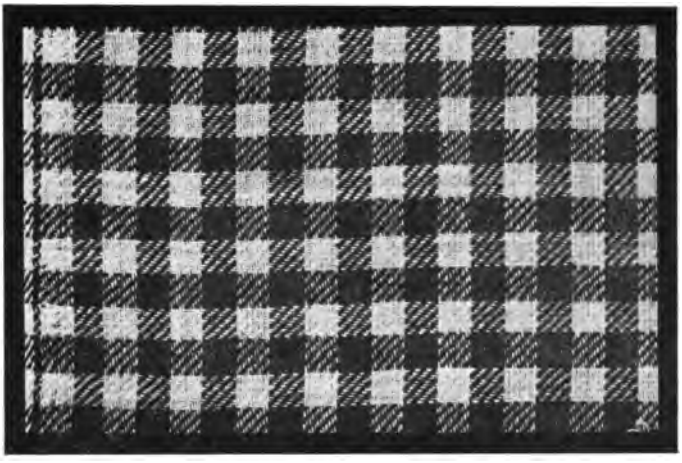
SAMPLE NO. 47.—GINGHAM CHECK.

Plain woven on box loom. Finished width, 31 inches.
72 ends and 61 picks per square inch, finished.
Warp yarn, 28s, dyed, 28s, bleached. Filling yarn, 34s, dyed, 34s, bleached.
Weight, 5.71 linear yards (4.92 square yards) per pound, finished.
Black and white in both warp and filling.



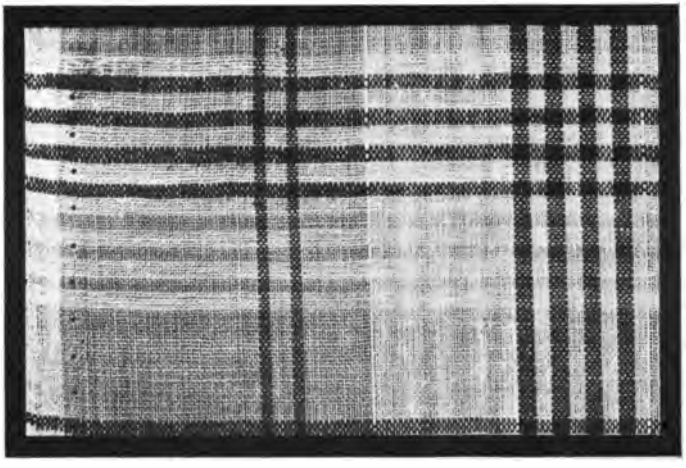
SAMPLE NO. 48.—NANKIN TICKING.

Plain woven. Finished width, 35¼ inches.
85 ends and 76 picks per square inch, finished.
Warp yarn, 28s, bleached. Filling yarn, 35s, dyed.
Weight, 4.13 linear yards (4.04 square yards) per pound, finished.
White warp and red filling.



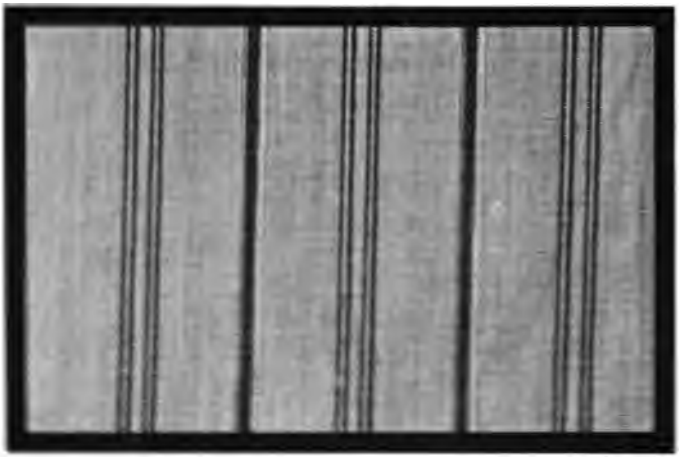
SAMPLE NO. 49.—SHEPHERD CHECK.

Twill woven (4-harness) on box loom. Finished width, 31 inches.
70 ends and 67 picks per square inch, finished.
Warp yarn, 29s, dyed, 29s, bleached. Filling yarn, 33s, dyed, 33s, bleached.
Weight, 5.81 linear yards (5 square yards) per pound, finished.
Black and white in both warp and filling.



SAMPLE NO. 50.—PLAID GINGHAM.

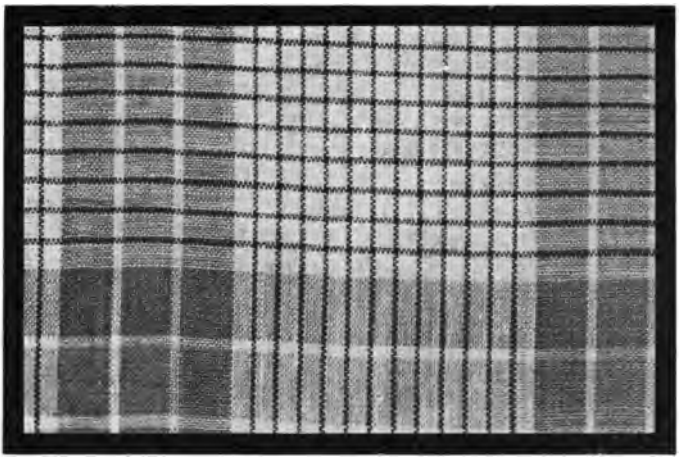
Plain woven on box loom. Finished width, 31½ inches.
68 ends and 57 picks per square inch, finished.
Warp yarn, 31s, dyed, 31s, bleached. Filling yarn, 41s, dyed, 41s, bleached.
Weight, 6.90 linear yards (6.04 square yards) per pound, finished.
White, black, blue, and brown in both warp and filling.



Sample No. 5. [illegible]

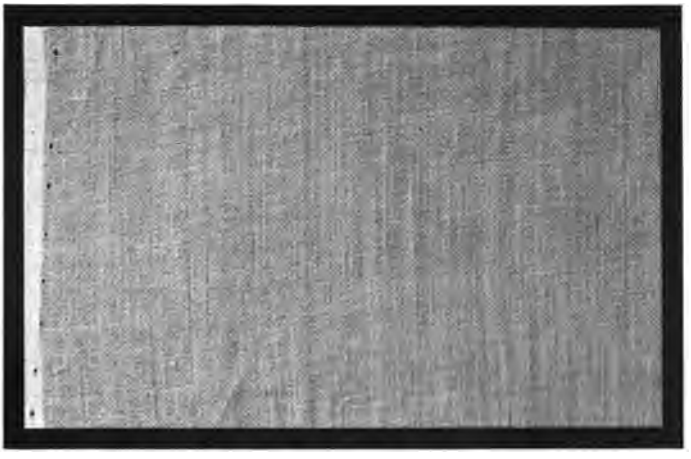
Plain weave. [illegible]
Warp and filling yarn, all bleached. Filling yarn, all bleached.
Right and wrong sides alike.

[illegible]



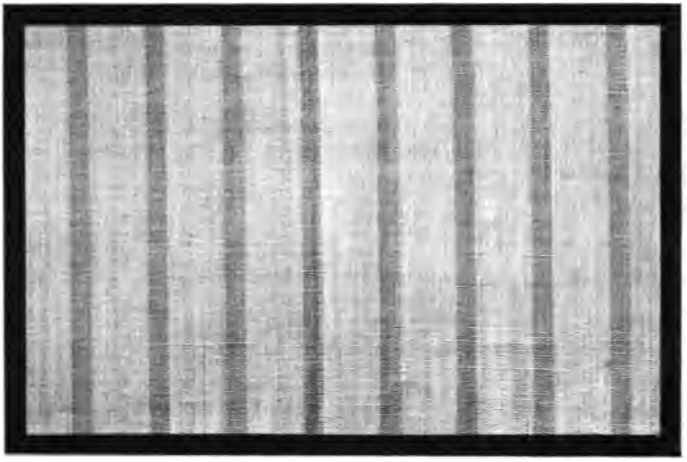
SAMPLE NO. 53.—GINGHAM CHECK.

Plain woven on box loom. Finished width, 32 inches.
81 ends and 66 picks per square inch, finished.
Warp yarn, 39s, dyed, 39s, bleached. Filling yarn, 43s, dyed, 43s, bleached.
Weight, 6.92 linear yards (6.15 square yards) per pound, finished.
Brown, white, green, and black in both warp and filling.



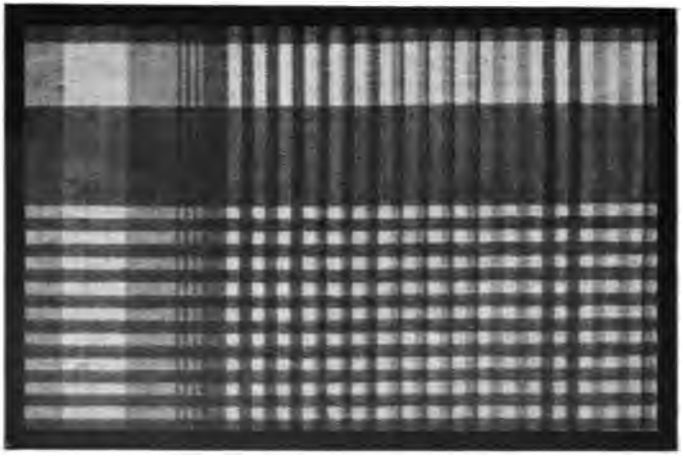
SAMPLE NO. 54.—SOLID-COLOR GINGHAM.

Plain woven. Finished width, 28 inches.
87 ends and 70 picks per square inch, finished.
Warp yarn, 37s, vat dyed. Filling yarn, 55s, vat dyed.
Weight, 7.91 linear yards (6.15 square yards) per pound, finished.
Light blue in both warp and filling. White warp selvage.



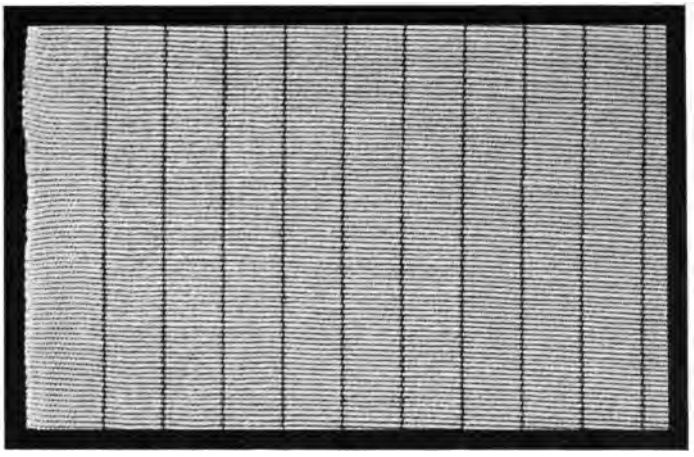
SAMPLE NO. 55.—STRIPED SHIRTING.

Plain woven. Finished width, 32 inches.
92 ends and 86 picks per square inch, finished.
Warp yarn, 43s, dyed, 43s, bleached. Filling yarn, 58s, bleached.
Weight, 6.78 linear yards (6.03 square yards) per pound, finished.
White and blue warp; white filling.



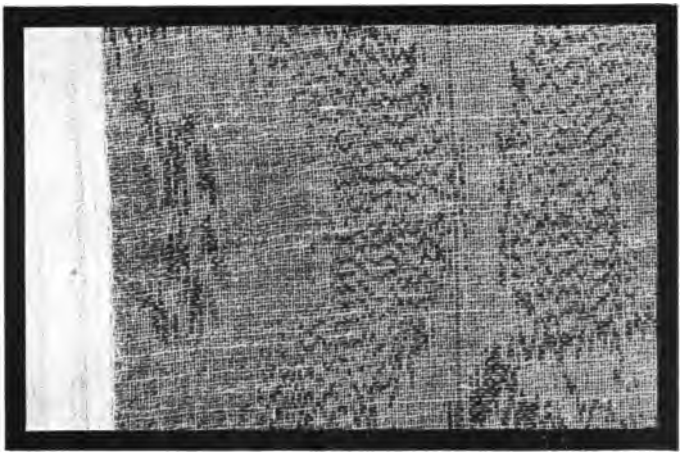
SAMPLE NO. 56.—FINE PLAID GINGHAM.

Plain woven on box loom. Finished width, 32 inches.
94 ends and 92 picks per square inch, finished.
Warp yarn, 43s, dyed, 43s, bleached. Filling yarn, 58s, dyed, 58s, bleached.
Weight, 6.42 linear yards 5.71 square yards per pound, finished.
Blue, white, black, and yellow in both warp and filling.



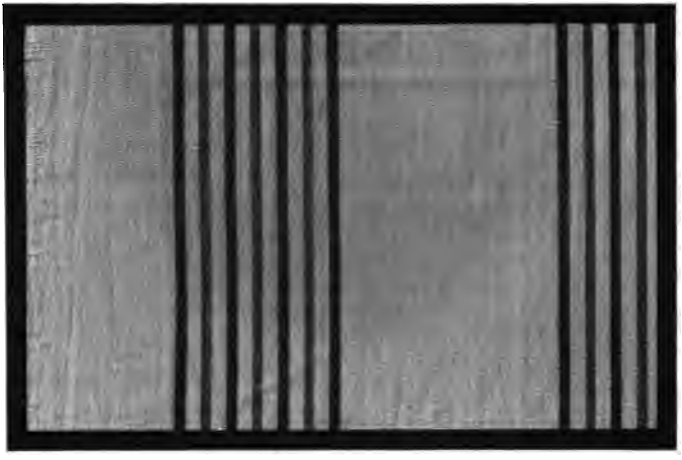
SAMPLE NO. 57.—STRIPED POPLIN.

Plain woven. Finished width, 54 inches.
168 ends and 38 picks per square inch, finished.
Warp yarn, 90/2, dyed. Filling yarn, 33/3, dyed.
Weight, 2.05 linear yards (3.07 square yards) per pound, finished.
Tan warp with blue stripes; tan filling. Mercerized.



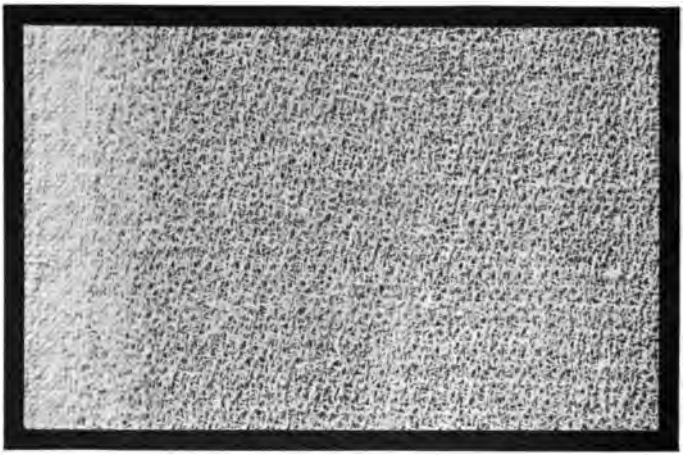
SAMPLE NO. 58.—WARP-PRINTED CRÊPE VOILE.

Plain woven. Finished width, 36 inches.
61 ends and 55 picks per square inch, finished.
Warp yarn, 107/2, hard twisted, printed. Filling yarn, hard twisted, 86/2, dyed.
Weight, 8.89 linear yards (8.89 square yards) per pound, finished.
Bleached warp printed in red, green, blue, brown, yellow, and black; blue filling.



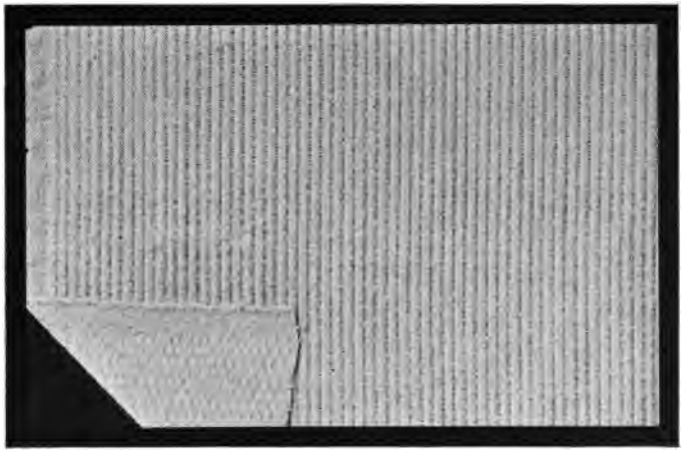
SAMPLE NO. 59.—FINE SHIRTING POPLIN, STRIPED.

Plain woven. Finished width, 31 inches.
147 ends and 76 picks per square inch, finished.
Warp yarn, 105/2, dyed, 105/2, bleached. Filling yarn, 109/2, bleached.
Weight, 5.86 linear yards (5.05 square yards) per pound, finished.
Black, grey, and white warp; white filling. Mercerized.



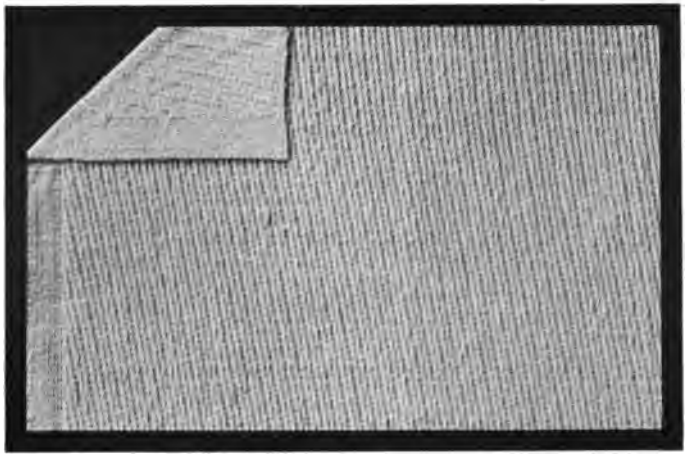
SAMPLE NO. 60.—CRÊPE.

Dobby woven (12-harness) on box loom. Finished width, 38½ inches.
57 ends and 47 picks per square inch, finished.
Warp yarn, 22s, hard twisted. Filling yarn, 21s, hard twisted.
Weight, 3.44 linear yards (3.68 square yards) per pound, finished.
Bleached.



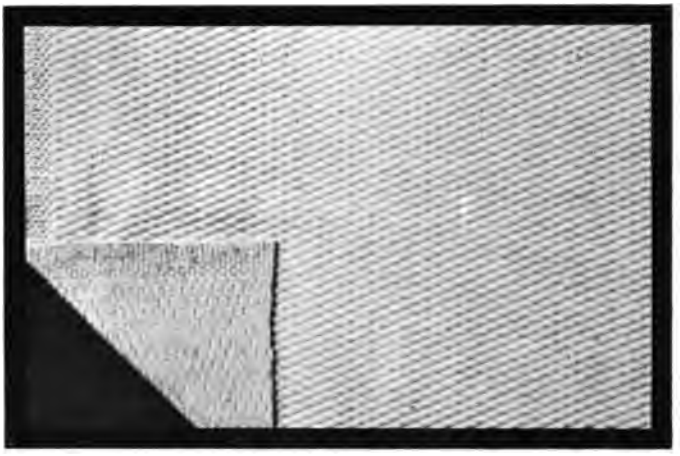
SAMPLE NO. 61.—BEDFORD CORD.

Dobby woven (12-harness). Grey width, 37½ inches.
103 ends and 80 picks per square inch, in the grey.
Warp yarn, 27s. Filling yarn, 38s.
Weight, 3.41 linear yards (3.55 square yards) per pound, in the grey.
Unbleached.



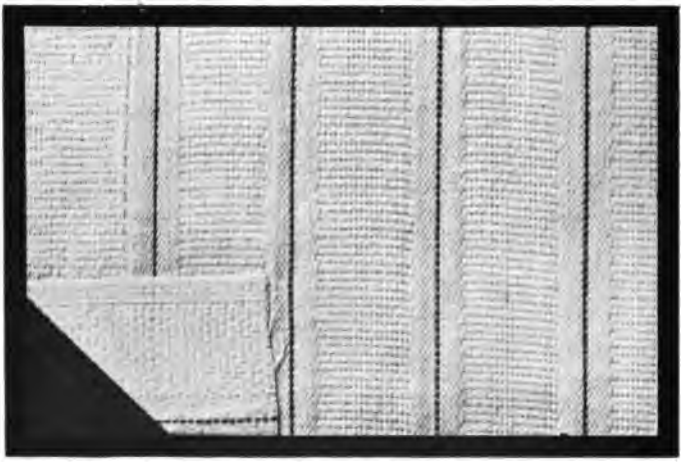
SAMPLE NO. 62.—STEEP TWILL.

Dobby woven (11-harness). Finished width, 39 inches.
148 ends and 64 picks per square inch, finished.
Warp yarn, 33s. Filling yarn, 31s.
Weight, 3.01 linear yards (3.26 square yards) per pound, finished.
Bleached.



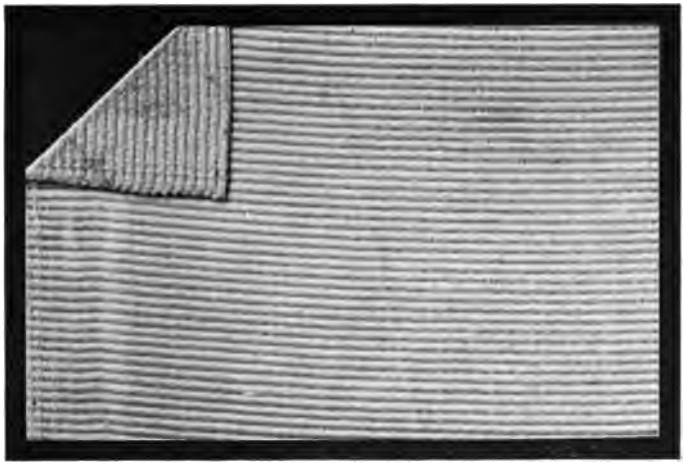
SAMPLE NO. 63.—FANCY PIQUÉ.

Dobby woven on box loom. Finished width, 28 inches.
155 ends and 223 picks per square inch, finished.
Warp yarn, 77s face, 82/2 back. Filling yarn, 90s face, 11s back.
Weight, 2.24 linear yards (1.74 square yards) per pound, finished.
Bleached.



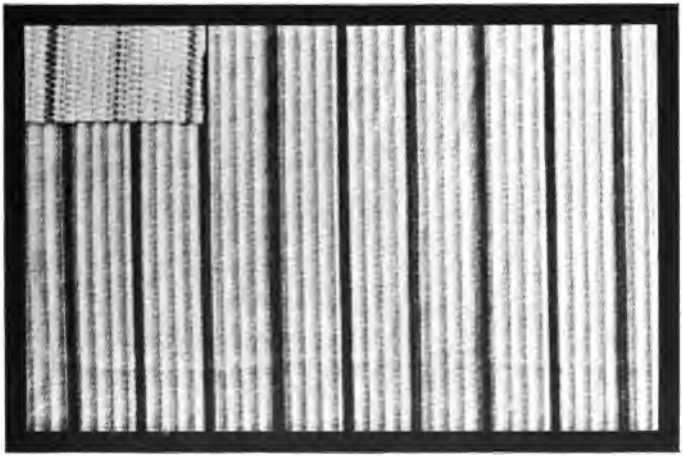
SAMPLE NO. 64.—FANCY OXFORD SHIRTING.

Dobby woven (6-harness). Finished width, 32 inches.
144 ends and 90 picks per square inch, finished.
Warp yarn, 41s, bleached, 80/2, dyed. Filling yarn, 41s, bleached.
Weight, 4.5 linear yards (4 square yards) per pound, finished.
White warp, with turkey red pin stripes; white filling.



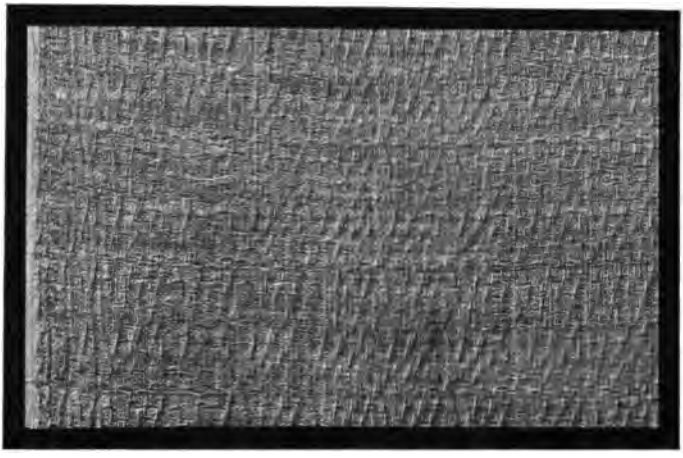
SAMPLE NO. 65.—PIQUÉ VESTING.

Dobby woven on box loom. Finished width, 28 inches.
135 ends and 230 picks per square inch, finished.
Warp yarn, 67s face, 68/2 back. Filling yarn, 78s face, 17s back.
Weight, 2.87 linear yards (2.23 square yards) per pound finished.
Bleached.



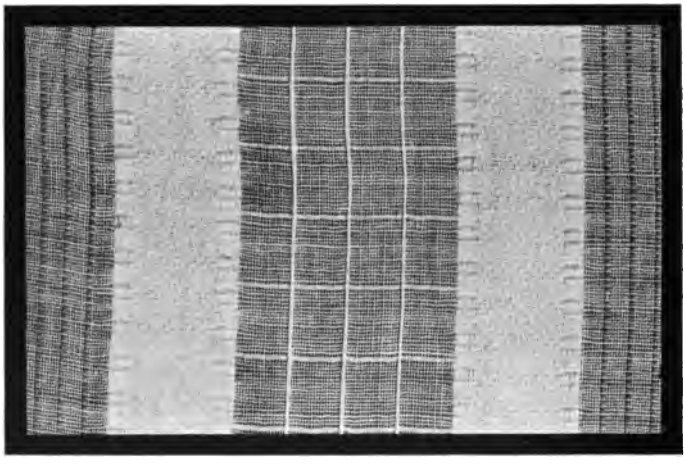
SAMPLE NO. 66.—BEDFORD CORD.

Dobby woven (8-harness). Finished width, 44 inches.
144 ends and 104 picks per square inch, finished.
Warp yarn, 57s; warp stuffing, 45/2. Filling yarn, 43s.
Weight, 3.27 linear yards (4 square yards) per pound, finished.
Bleached, with brown printed stripes.



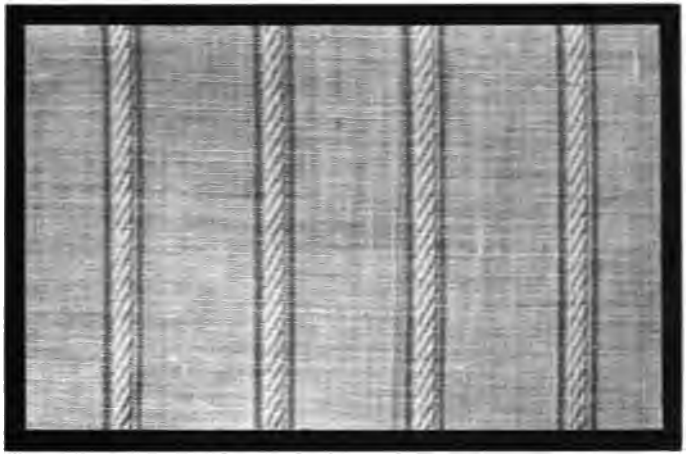
SAMPLE NO. 67.—COLORED JACQUARD SHIRTING.

Jacquard woven. Finished width, 32 inches.
90 ends and 75 picks per square inch, finished.
Warp yarn, 44s, vat dyed. Filling yarn, 55s, bleached.
Weight, 7.5 linear yards (6.67 square yards) per pound, finished.
Lavender warp and white filling.



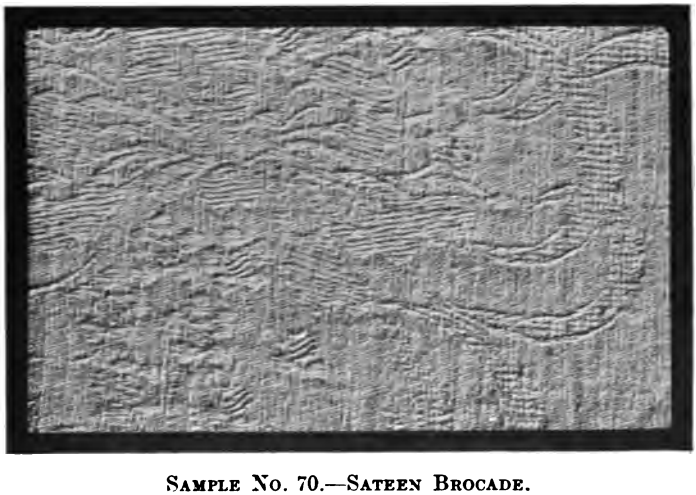
SAMPLE NO. 68.—FANCY STRIPED VOILE.

Dobby woven (14-harness). Finished width, 39 inches.
80 ends and 56 picks per square inch, finished.
Warp yarn, 102/2 bleached; 40/2 and 29/4 bleached and mercerized; 55/2 dyed.
Filling yarn, 54s bleached.
Weight, 5.51 linear yards (5.97 square yards) per pound, finished.
White warp with lavender stripes and mercerized white stripes; white filling.



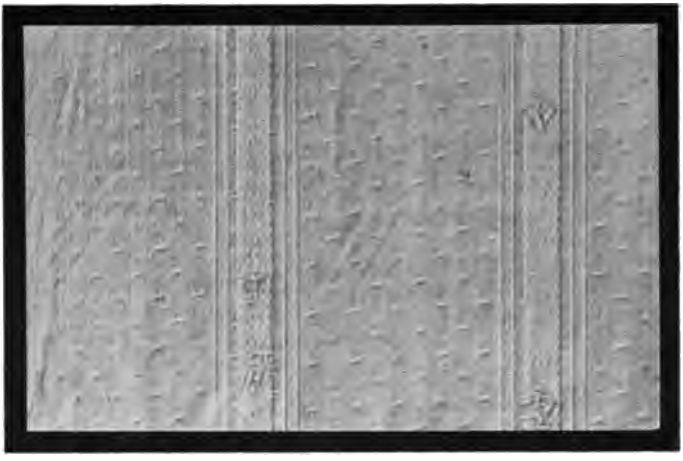
SAMPLE NO. 69.—DOBBY SHIRTING STRIPES.

Dobby woven (10-harness). Finished width, 32 inches.
103 ends and 88 picks per square inch, finished.
Warp yarn, 62s, bleached; 86/2, dyed; 72/2, bleached, mercerized. Filling yarn, 56s bleached.
Weight, 6.84 linear yards (6.08 square yards) per pound, finished.
Lavender, white, and white mercerized warp; white filling.



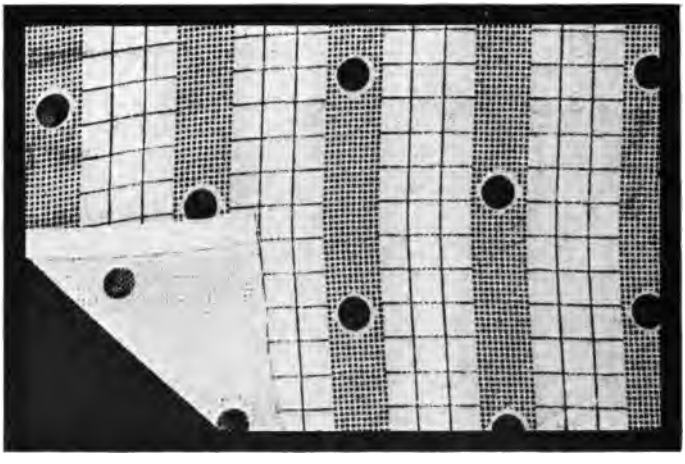
SAMPLE NO. 70.—SATEEN BROCADE.

Jacquard woven. Grey width, 39 inches.
87 ends and 140 picks per square inch, in the grey.
Warp yarn, 54s. Filling yarn, 68s.
Weight, 5.46 linear yards (5.92 square yards) per pound, in the grey.
Unbleached.



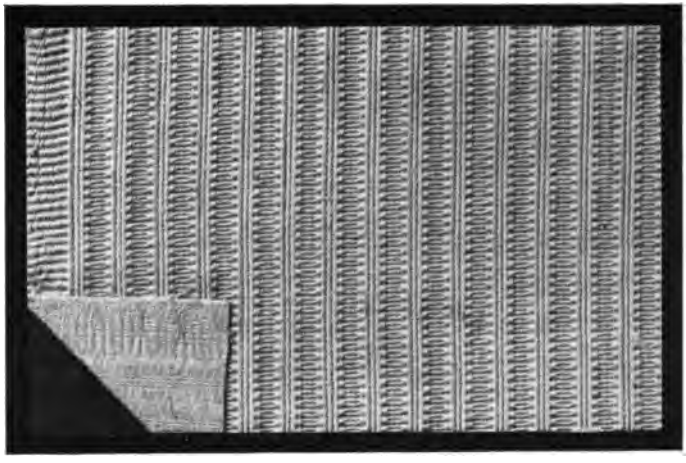
SAMPLE NO. 71.—JACQUARD SHIRTING.

Jacquard woven. Finished width, 32 inches.
124 ends and 118 picks per square inch, finished.
Warp yarn, 63s, with 55/2 in warp cords. Filling yarn, 66s.
Weight, 6.21 linear yards (5.52 square yards) per pound, finished.
Bleached and mercerized.



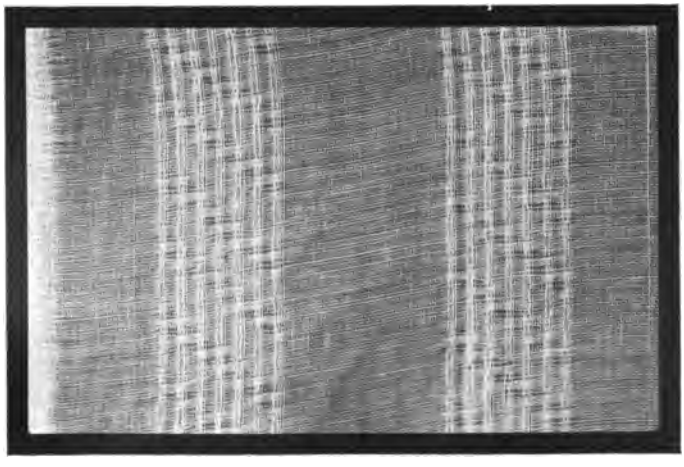
SAMPLE NO. 72.—SATEEN BROCADE.

Jacquard woven, with small filling sateen figures on a warp sateen ground. Finished width, 30 inches.
168 ends and 99 picks per square inch, finished.
Warp yarn, 74s. Filling yarn, 58s.
Weight, 6.73 linear yards (5.61 square yards) per pound, finished.
Bleached, mercerized, and printed in two colors, brown and purple.



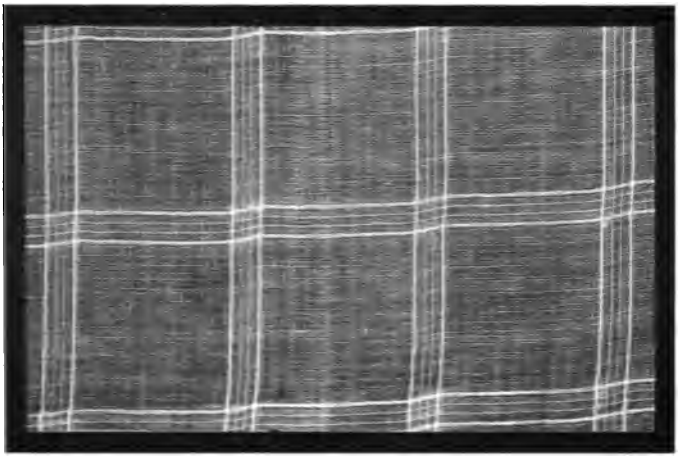
SAMPLE NO. 73.—FANCY PIQUÉ SHIRTING.

Dobby woven (7-harness) on box loom. Finished width, 36 inches.
221 ends and 248 picks per square inch, finished.
Warp yarn, 150/2 and 70s face, 62/2 and 54/2 back. Filling yarn, 152s face, 68s back.
Weight, 3.23 linear yards (3.23 square yards) per pound, finished.
Bleached, mercerized.



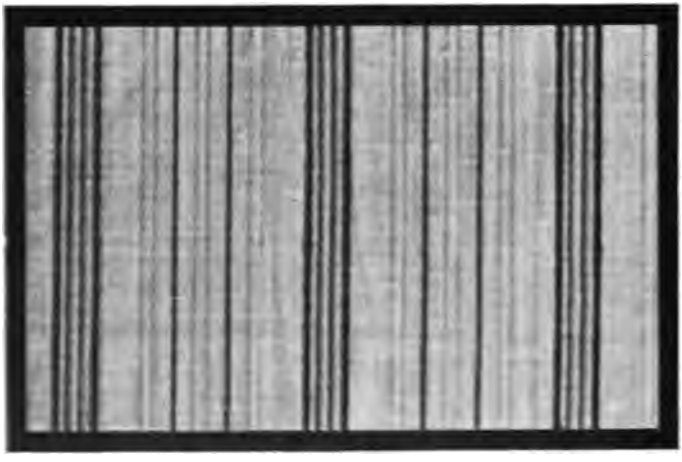
SAMPLE NO. 74.—THREAD-STRIPE ORGANDY.

Dobby woven (9-harness). Finished width, 44 inches.
90 ends and 68 picks per square inch, finished.
Warp yarn, 109s and 39/2. Filling yarn, 147s.
Weight, 10.91 linear yards (13.33 square yards) per pound, finished.
Bleached, organdy finish.



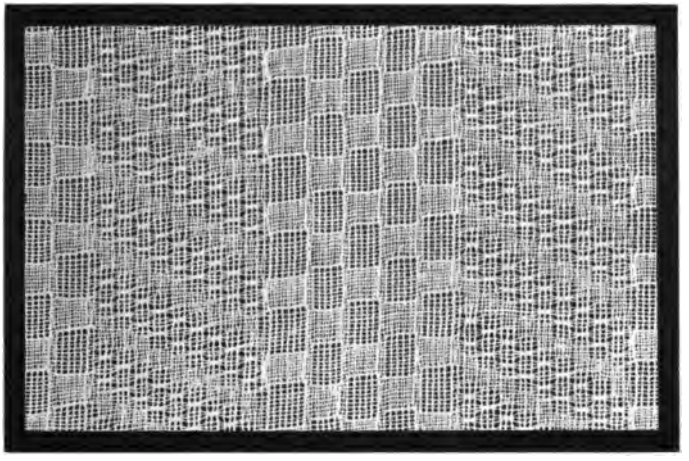
SAMPLE NO. 75.—TRANSPARENT ORGANDY CHECK.

Woven on plain or on dobby loom (4-harness) without boxes. Finished width, 37½ inches.
97 ends and 91 picks per square inch, finished.
Warp yarn, 104s and 104 3, warp cords. Filling yarn, 140s.
Weight, 12.80 linear yards (13.33 square yards) per pound, finished.
Bleached, organdy finish.



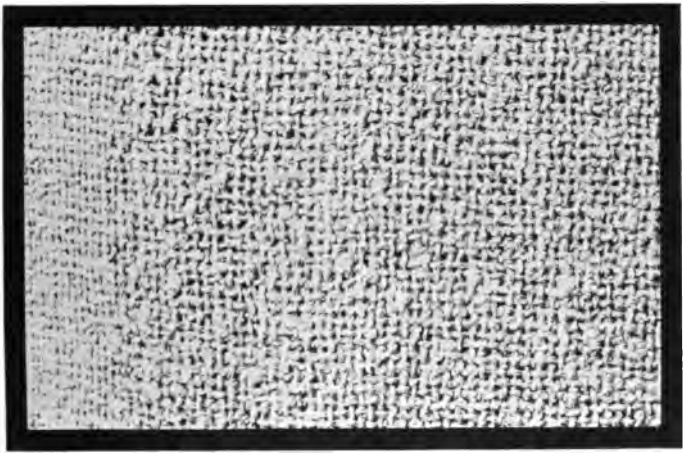
SAMPLE NO. 76. RUSSIAN-CORD SHIRTING.

Plain woven ground with leno covered cords. Finished width, 32 inches.
101 ends and 85 picks per square inch, finished.
Warp yarn, 44s dyed, 44s bleached, cord base, 40 2 dyed and 36 2 dyed; leno whip thread, 76 2 dyed. Filling yarn, 60s bleached.
Weight, 5.89 linear yards (5.24 square yards) per pound, finished.
White, tan, brown, and blue warp, white filling.



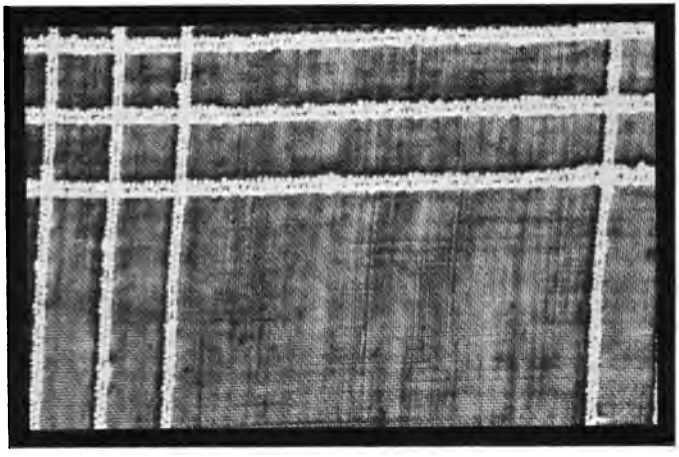
SAMPLE NO. 77.—FANCY LENO VOILE.

Dobby and leno woven. Finished width, 42 inches.
64 ends and 52 picks per square inch, finished.
Warp yarn, 111/2, bleached, 111/2, dyed. Filling yarn, 102/2 bleached.
Weight, 7.62 linear yards (8.89 square yards) per pound, finished.
White warp with blue stripes; white filling.



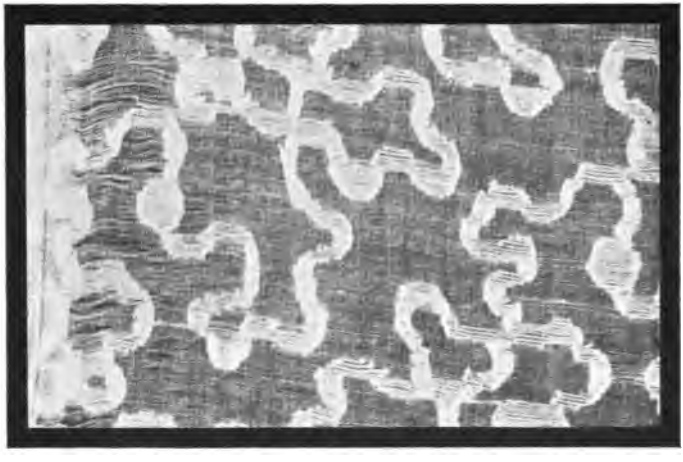
SAMPLE NO. 78.—RATINÉ OR SPONGE CLOTH.

Plain woven. Finished width, 39 inches.
18 ends and 18 picks per square inch, finished.
Novelty yarn composed of 28/2, 14s, and 28s twisted together, in both warp and filling.
Weight, 2.17 linear yards (2.35 square yards) per pound, finished.
Piece-dyed rose.



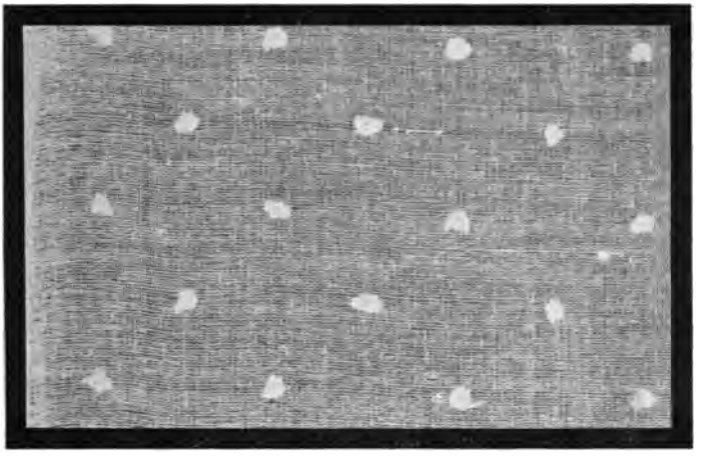
SAMPLE NO. 79.—FANCY NOVELTY VOILE.

Plain woven on box loom. Finished width, 42 inches.
66 ends and 62 picks per square inch, finished.
Warp yarn, 114/2, hard twisted, dyed; 30/4, novelty yarn, bleached. Filling yarn, 134/2, hard twisted, dyed; 30/4 novelty yarn, bleached.
Weight, 6.47 linear yards (7.55 square yards) per pound, finished.
Red voile yarn, and white novelty yarn, in both warp and filling.



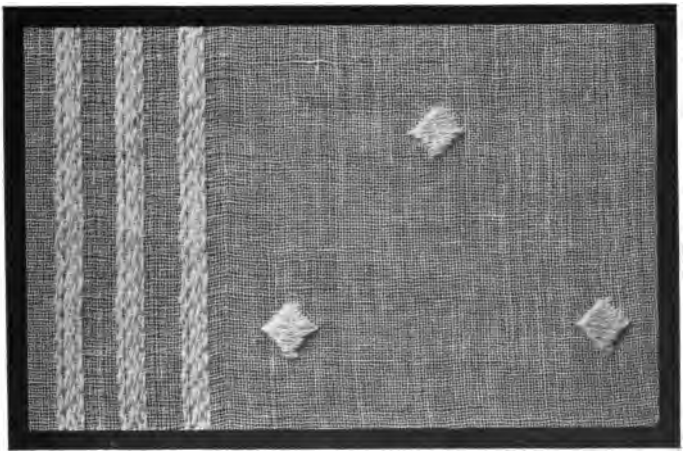
SAMPLE NO. 80.—JACQUARD CLIPPED FANCY.

Jacquard woven. Finished width, 46 inches.
80 ends and 140 picks per square inch, finished.
Warp yarn, 104s. Filling yarn, 115s, with 30s (estimated) in clipped figures.
Weight, 9.27 linear yards (11.85 square yards) per pound, finished.
Clipped, bleached, and starched.



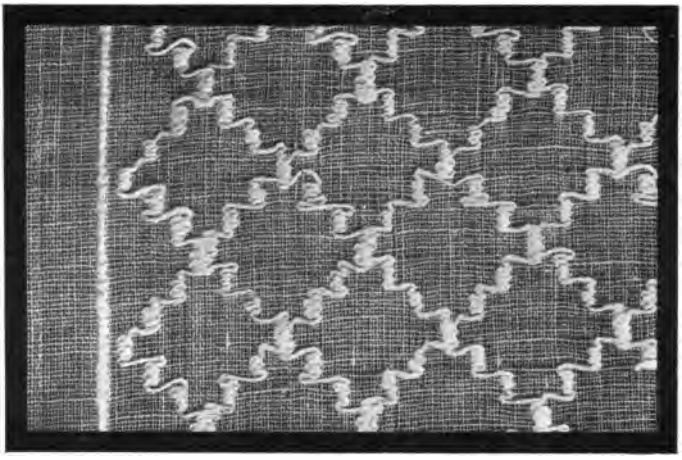
SAMPLE NO. 81.—CLIPPED SPOT LAWN.

Dobby woven (10-harness) on box loom. Finished width, 45½ inches.
82 ends and 79 picks per square inch, finished.
Warp yarn, 98s. Filling yarn, 138s and 20s (estimated).
Weight, 12.66 linear yards (16 square yards) per pound, finished.
Clipped, bleached, and starched.



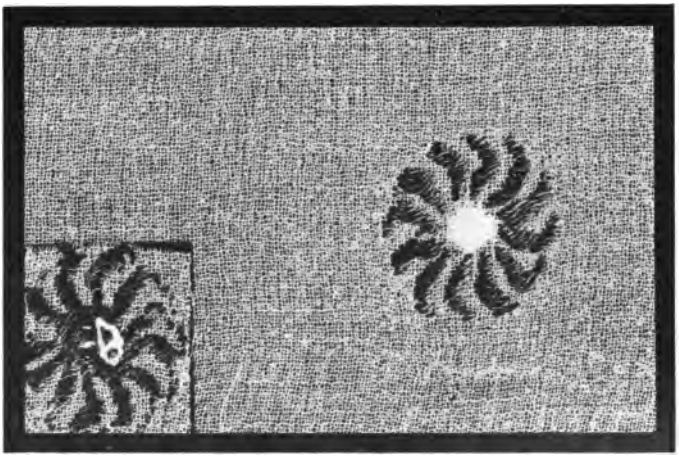
SAMPLE NO. 82.—FANCY SWIVEL VOILE.

Plain woven ground with dobby stripes and swivel figures.
Finished width, 38 inches.
61 ends and 62 picks per square inch, finished.
Warp yarn, 74/2, bleached, 42/3, dyed. Filling ground yarn, 128/2 bleached.
Swivel yarn, 60/3 (estimated), mercerized and dyed.
Weight, 8.19 linear yards (8.65 square yards) per pound, finished.
Blue and white warp. White filling with blue swivel figure. Clipped.



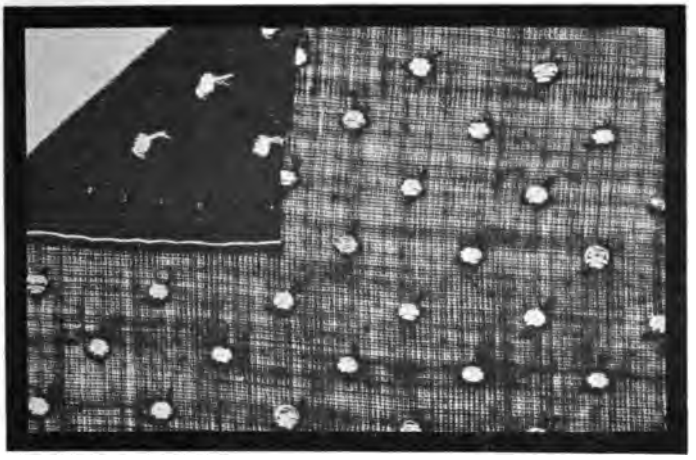
SAMPLE NO. 83.—TWO-FRAME LAPPET.

Plain woven ground with lappet figuring. Finished width, 38 inches.
59 ends and 43 picks per square inch, finished.
Warp ground yarn, 58s, 30/5 cord, 30/3 lappet. Filling yarn, 71s bleached.
Weight, 10.11 linear yards (10.67 square yards) per pound, finished.
Bleached. Printed in olive and blue.



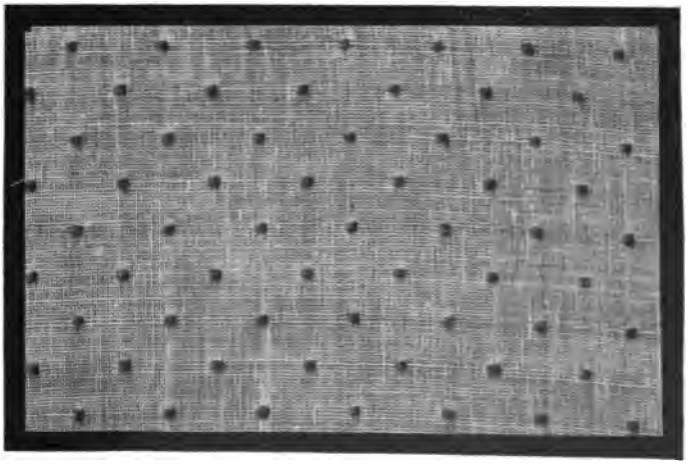
SAMPLE NO. 84.—PLUMETIS CRÊPE.

Plain woven ground with lappet and swivel figures. Finished width, 39 inches.
58 ends and 52 picks per square inch, finished.
Warp ground yarn, 103/2, hard twisted, bleached. Lappet yarn, 40/2 (estimated), bleached, mercerized. Filling ground yarn, 59s hard twisted, bleached; swivel yarn, 40/2 (estimated), mercerized and dyed.
Weight, 7.03 linear yards (7.61 square yards) per pound, finished.
Bleached ground with white lappet and brown swivel threads. Clipped.



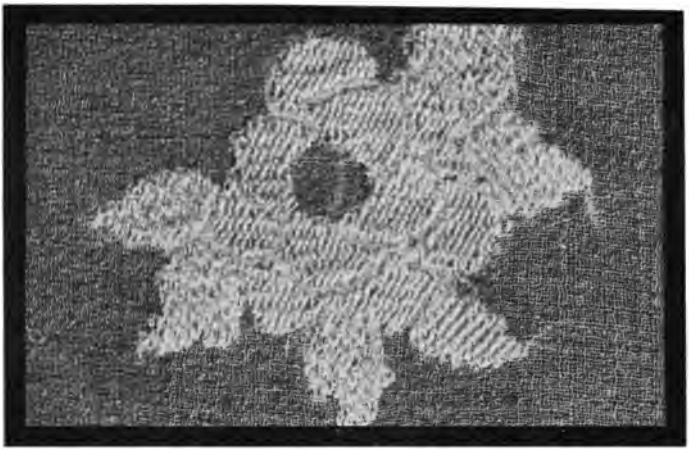
SAMPLE NO. 85.—DOTTED SWISS.

Plain woven ground with swivel dots. Finished width, 31½ inches.
79 ends and 59 picks per square inch, finished.
Warp yarn, 64s, dyed. Filling ground yarn, 55s, dyed. Swivel yarn, 40s (estimated), mercerized and dyed.
Weight, 11.09 linear yards (9.70 square yards) per pound, finished.
Blue warp. Blue filling with red swivel dots. Clipped.



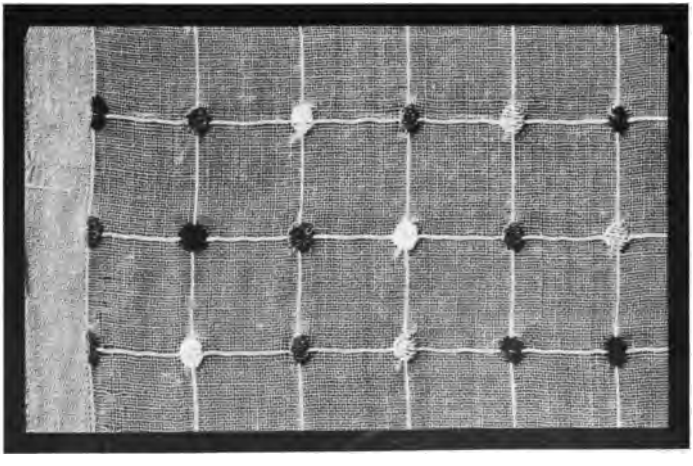
SAMPLE NO. 86.—DOTTED SWISS.

Plain woven ground with swivel dots. Finished width, 31½ inches.
82 ends and 60 picks per square inch, finished.
Warp yarn, 63s, bleached. Filling ground yarn, 90s, bleached. Swivel yarn, 70s (estimated), mercerized and dyed.
Weight, 12.62 linear yards (11.04 square yards) per pound, finished.
Bleached warp. Bleached filling with blue swivel dots. Clipped.



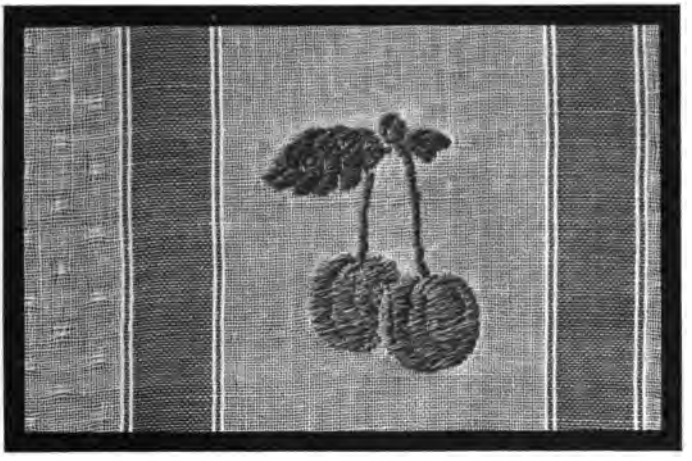
SAMPLE NO. 87.—PLUMETIS CRÊPE.

Plain woven ground with swivel figure. Finished width, 39 inches.
59 ends and 54 picks per square inch, finished.
Warp yarn, 101/2, hard twisted. Filling ground yarn, 93/2, hard twisted. Swivel yarn, 18/2, bleached and mercerized.
Weight, 6.51 linear yards (7.05 square yards) per pound, finished.
Clipped and bleached.



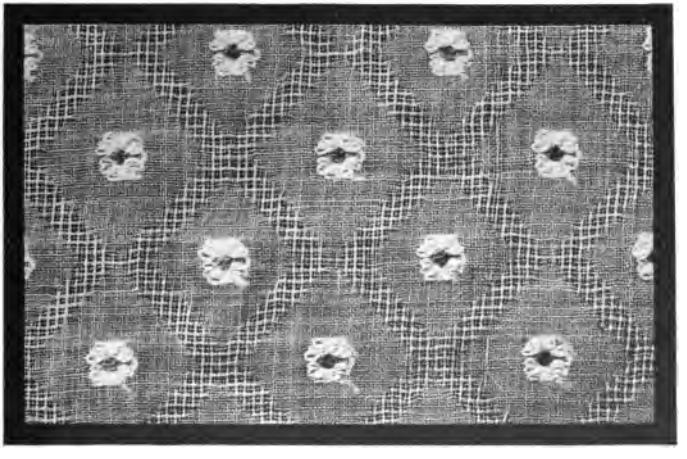
SAMPLE NO. 88.—FANCY SWIVEL VOILE.

Plain woven ground with swivel dots in six colors. Finished width, 41 inches.
73 ends and 67 picks per square inch, finished.
Warp yarns, 132/2, dyed, 132/2, bleached. Filling ground yarn, 136/2 bleached. Swivel yarn, 30/2 (estimated), mercerized and dyed.
Weight, 7.02 linear yards (8.02 square yards) per pound, finished.
Blue and white warp. White filling, with red, green, black, violet, yellow, and blue swivel threads. Clipped.



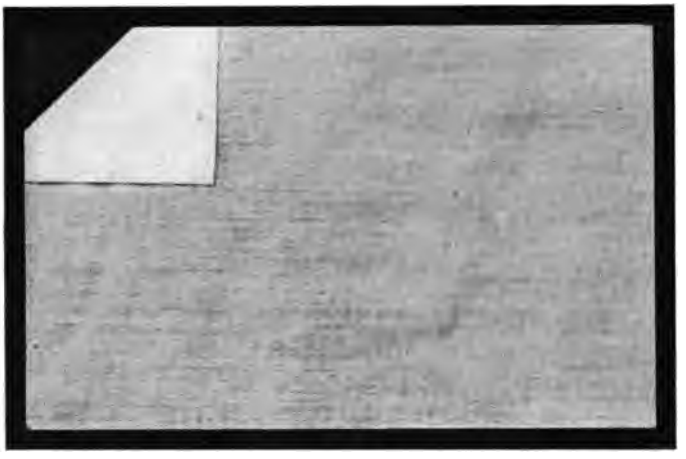
SAMPLE NO. 89.—FANCY SWIVEL VOILE.

Fancy ground with swivel figures. Finished width, 41 inches.
70 ends and 60 picks per square inch, finished.
Warp yarn, 138/2 bleached, 138/2 dyed. Filling yarn, 120/2 bleached. Swivel yarn, 40/3 (estimated) mercerized, and dyed.
Weight, 7.80 linear yards (8.88 square yards) per pound, finished.
Red and white warp, white filling with salmon and green swivel threads. Clipped.



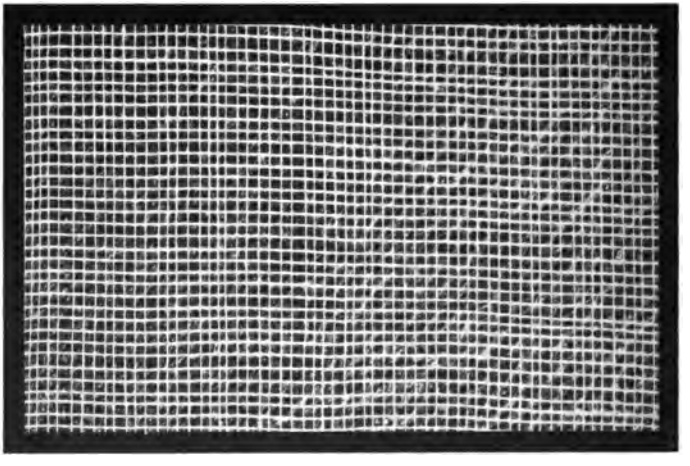
SAMPLE NO. 90 —FANCY SWIVEL AND LAPPET.

Fancy ground with swivel figures. Finished width, 39 inches.
93 ends and 75 picks per square inch, finished.
Warp yarn, 101s, bleached, mercerized. Lappet yarn, 40/3 (estimated), mercerized and dyed. Filling yarn, 134s, bleached. Swivel yarn, 40/3 (estimated), bleached and mercerized.
Weight, 13.43 linear yards (14.55 square yards) per pound, finished.
White warp and yellow lappet yarn; white filling and white swivel yarn. Clipped.



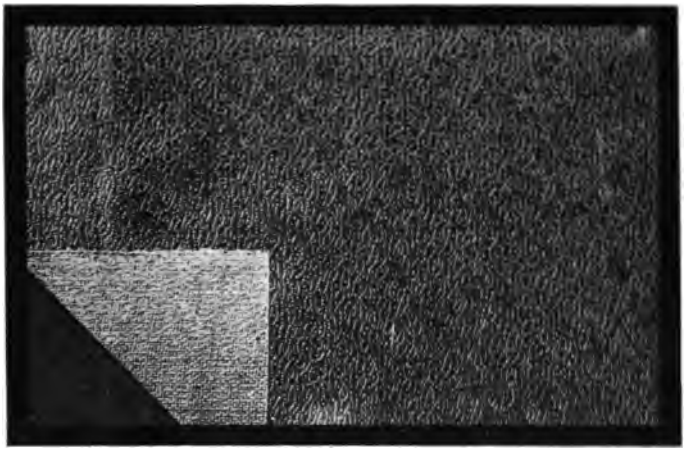
SAMPLE NO. 91.—TRACING CLOTH.

Plain woven. Finished width, 37 inches.
87 ends and 86 picks per square inch, finished.
Warp yarn, 65s. Filling yarn, 83s.
Weight, 5.98 linear yards (6.15 square yards) per pound, finished.
Bleached, coated, and glazed.



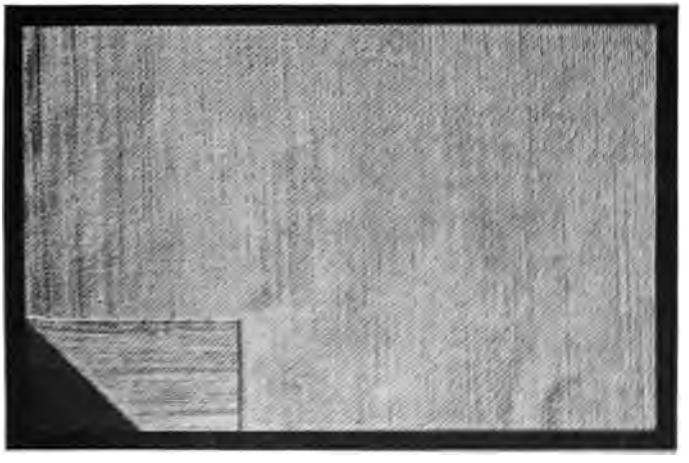
SAMPLE NO. 92.—NEAR GLASS.

Plain woven. Finished width, 54 inches.
19 ends and 18 picks per square inch, finished.
Warp yarn, 72s. Filling yarn, 60s.
Weight, 15.26 linear yards (22.89 square yards) per pound, finished.
Bleached and coated.



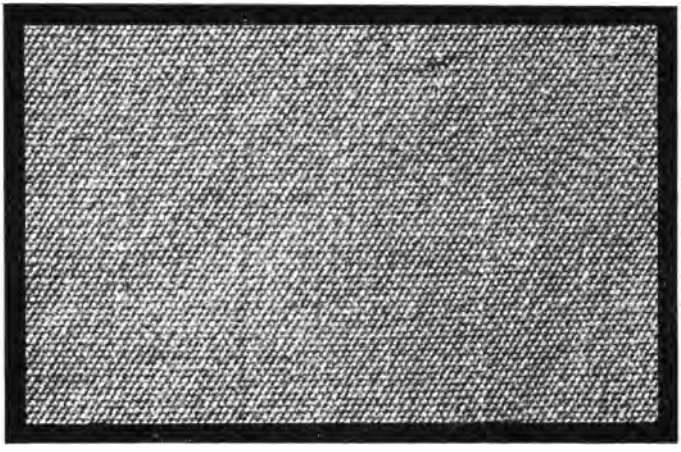
SAMPLE NO. 93.—BOOK CLOTH.

Plain woven. Finished width, 40 inches.
66 ends and 56 picks per square inch, finished.
Warp yarn, 34s. Filling yarn, 35s.
Weight, 3.79 linear yards (4.21 square yards) per pound, finished.
Piece-dyed, coated, and embossed.



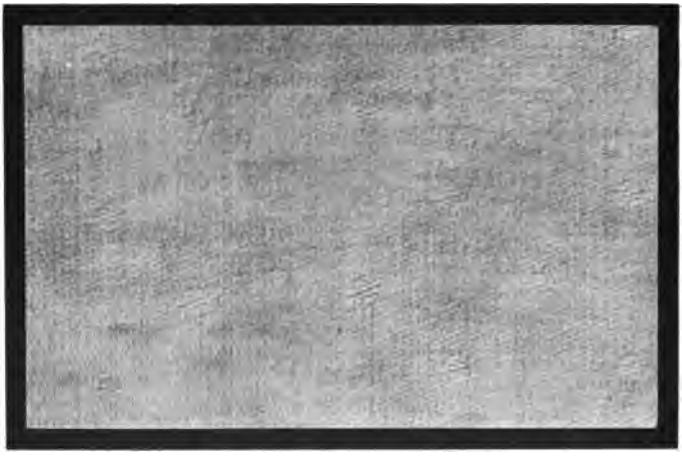
SAMPLE 94.—WINDOW HOLLAND.

Plain woven. Finished width, 48 inches.
67 ends and 55 picks per square inch, finished.
Warp yarn, 22s. Filling yarn, 24s.
Weight, 2.15 linear yards, 2.47 square yards, per pound, finished.
Piece-dyed, lined, beetled, and glazed.



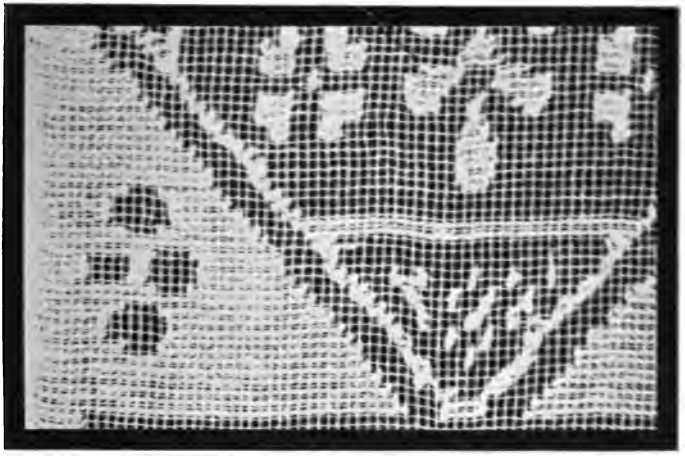
SAMPLE NO. 95.—AUTO TOP CLOTH (WATERPROOF).

Plain woven. Finished width, 60 inches.
54 ends and 32 picks per square inch, finished.
Warp yarn, 12/3, grandrelle. Filling yarn, 12/2, dyed
Weight, 0.63 linear yard (1.05 square yards) per pound, finished.
Grey tint drab warp, grey tint filling. Waterproof, by reason of close weave.



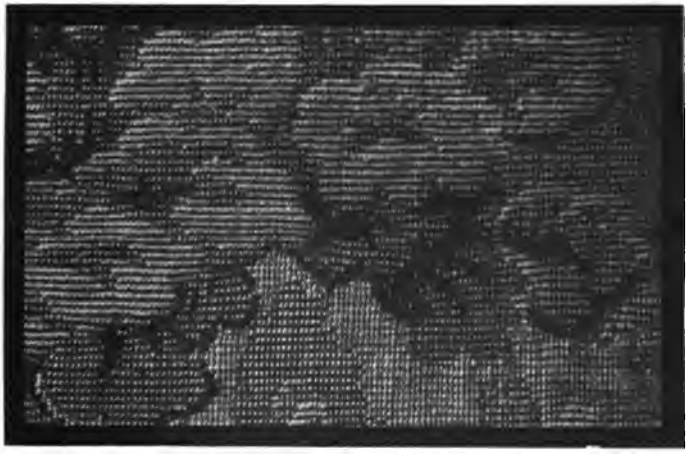
SAMPLE NO. 96.—COTTON TABLE DAMASK.

Jacquard woven, with filling-sateen figures on warp-sateen ground. Finished width, 36 inches.
73 ends and 80 picks per square inch, finished.
Warp yarn, 25s. Filling yarn, 26s.
Weight, 3.75 linear yards (3.75 square yards) per pound, finished.
Bleached, starched, and calendered.



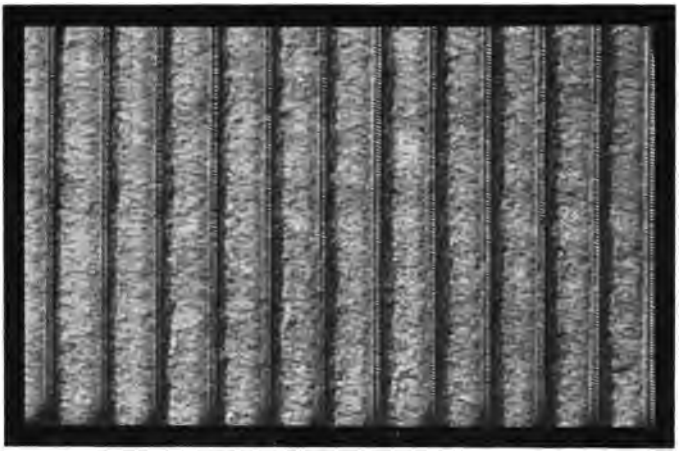
SAMPLE NO. 97.—MADRAS MUSLIN.

Leno ground with Jacquard woven figures. Finished width, 40 inches.
42 ends and 41 picks per square inch, finished.
Warp yarn, 68s. Filling yarn, 58s, with 10s in clipped figures.
Weight, 10.29 linear yards (11.43 square yards) per pound, finished.
Clipped and bleached.



SAMPLE NO. 98.—COTTON TAPESTRY.

Jacquard woven double cloth. Finished width, 50 inches.
139 ends and 72 picks per square inch, finished.
Warp yarn, 41/2 dyed. Filling yarn, 80s, dyed, 5s, dyed.
Weight, 0.95 linear yard (1.32 square yards) per pound, finished.
Green, olive green, blue, brown, red, and salmon warp. Black and grey filling.



SAMPLE NO. 99.—CORDUROY.

Filling-pile weave, plain back. Finished width, 28½ inches.
42 ends and 232 picks per square inch, finished.
Warp yarn, 16/2. Filling yarn, 23s, pile yarn, 23s (estimated).
Weight, 1.39 linear yards (1.10 square yards) per pound, finished.
Cut and piece-dyed silver grey.

SAMPLE NO. 100.—VELVETEEN.

Filling-pile weave, twilled back. Finished width, 27 inches.
84 ends and 156 picks per square inch, finished.
Warp yarn, 37s. Filling yarn, 50s; pile yarn, 50s (estimated).
Weight, 2.95 linear yards (2.21 square yards) per pound, finished.
Cut and piece-dyed black.

○

UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPH 902 OF THE TARIFF ACT OF 1922

COTTON SEWING THREAD AND COTTONS FOR HANDWORK

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When articles or commodities are covered by two or more paragraphs of the tariff act, they are sometimes combined in one survey. This is done only when similarity and industrial relationship are sufficient to justify a joint treatment. When one grade of an article or commodity is dutiable and another grade is on the free list, the entire treatment is effected under the dutiable paragraph.

The commission has issued as a separate pamphlet an index to all its publications. This index lists in alphabetical order the articles or commodities treated in any commission publication.

In the preparation of this survey the commission had the services of R. E. K. Peterson, of the textile division of the commission's staff, and of others.

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COTTON SEWING THREAD AND COTTONS FOR HANDWORK

INTRODUCTION

The cotton-thread industry has two distinct branches, each having a more or less specialized field and a highly diversified range of products. The section of greatest importance produces thread known as manufacturers' thread for use in industry; the other, so-called domestic thread, this term being used to include not only thread for home sewing by hand or machine but also darning, knitting, and art needlework cottons. Although a few of the larger mills make both kinds, most of the mills in the United States confine their production to manufacturers' thread. Census reports show production of "cotton thread" amounting to 23,275,618 pounds in 1921, 31,645,537 pounds in 1923, and 37,585,368 pounds (valued at $59,875,776) in 1925. The Census data include all cotton sewing thread for either manufacturers' or household use, but do not include cottons for handwork—these softer spun threads being included without separate enumeration with cotton yarn—so that the total output of the industry is greater than that shown by the Bureau of the Census.

Considering its historic upbuilding, it is interesting to note that the cotton-thread industry in this country was energized, just as were some of the early railroad enterprises, by the influx of foreign capital. The investment of foreign capital in this branch of domestic industry began during the Civil War period when, because of tariff increases, the Clark Thread Co., of Paisley, Scotland, established a branch in New Jersey, and J. & P. Coats, also of Paisley, took over a domestic plant in Rhode Island. Two other British companies subsequently built plants in this country but were absorbed by the Clark Thread Co. which in turn was itself consolidated with J. & P. Coats in 1896. The Coats concern of Paisley continued to expand its international connections, establishing mills in almost every country of Europe, as well as in Canada, Mexico, Brazil, and Japan.

Another large British company, the English Sewing Cotton Co., of Manchester, England, which had been formed by the merger of 14 thread companies in Great Britain, including a subordinate concern in France and one in Canada, entered the American field in 1898. It purchased practically all the common stock of the American Thread Co., organized by the fusion of 14 domestic thread manufacturers.

Concentration of production is an outstanding feature of the "domestic" or household branch of the cotton-thread industry in the United States. In fact, in the manufacture of spool thread and

handwork cottons for household use there is little small-scale production and there are only a few producers. About nine-tenths of the American output of domestic thread and handwork cottons is made by three large companies which overshadow all the other concerns in size.

In manufacturers' thread, on the other hand, production is diffused among a large number of sharply competing mills. In this branch, the most important in the industry, the three large-scale companies are estimated to produce about 45 per cent of the American supply; a large part of this quota is the output of the American Thread Co., as the other two, the Coats and Clark units, specialize for the most part in domestic thread and handwork cottons. The remaining 55 per cent of the production of manufacturers' thread is distributed among 150 or more medium and small-sized mills and jobbers.

The three large companies and two smaller concerns are integrated plants and conduct the entire cycle of manufacturing processes from the raw cotton to the finished thread. Virtually all of the moderate-sized thread factories, mostly located in New England, start with the grey yarn which they purchase from spinning mills specializing in so-called thread yarns, and carry their operations through the doubling, twisting, dyeing, bleaching, finishing, and putting-up processes. The majority of the small mills which are centralized in the metropolitan area of New York have the conversion processes done for them on commission by mills specializing in the various processes, and engage only in assembling, spooling, and marketing the finished thread. As they sell their goods under their own trade-marked brands, these small concerns enter into price competition with manufacturers who conduct all or most of the thread-making operations in their own plants.

Imports of sewing thread in recent years have tended to diminish and amount to a very small percentage of the total domestic production. They are largely supplemental, as the two large thread concerns abroad do not market any significant part of their exportable surplus in this country.

The branch of the industry producing cottons for handwork is the one most seriously affected by foreign competition, which is heaviest from France. During the three years, 1923–1925, imports of French origin averaged about 70 per cent of the total quantity and 85 per cent of the total value of all the imports under paragraph 902 of the act of 1922; in 1926 the proportions were approximately 60 and 80 per cent, respectively. French handwork cottons have been held in high repute for fastness of dye and high luster, and prior to the war were generally considered superior to the domestic. The curtailment of imports during the period of hostilities, however, stimulated the American manufacturers to expand their output and improve the quality, with the result that domestic handwork cottons now compare favorably with the imported and are steadily growing in popular estimation. The domestic producers, moreover, have a distinct advantage in their proximity to United States markets, which enables them to supply consumers on short notice. The price differential in favor of American handwork cottons and the ready response of manufacturers to market demands both operate to aid domestic producers in the face of the heavy competition from France.

The United States exports of sewing thread are considerably smaller in value than imports. In late years they have been on the decline, dropping from 1,653,184 pounds in 1922 to 960,454 pounds in 1925, but rising in 1926 to 1,299,269 pounds. The three principal thread manufacturers in this country cater primarily to home-market demand. American producers of thread who had developed an export business during the war when European production was at a low ebb now find it difficult to compete in the world markets against the two chief British thread manufacturers, J. & P. Coats (Ltd.) and the English Sewing Cotton Co., 80 per cent of whose production in the United Kingdom is destined for the export trade. With their wide commercial and industrial affiliations of an international character, these leading British companies virtually dominate the cotton sewing-thread production and trade of the world. The competitive strength of the British thread industry in international commerce is evidenced by the exports from Great Britain, which attained a record of 34,695,400 pounds in 1900 and averaged during the five years 1922–1926 about 18,000,000 pounds a year.

Domestic exports of crochet, darning, and embroidery cottons amounting to 291,456 pounds in 1922, declined to 97,701 pounds in 1925, and recovered to 123,400 pounds in 1926. Exporters of American-made handwork cottons find considerable difficulty in competing against the trade prestige of long-established European brands, particularly the French.

COTTON SEWING THREAD AND COTTONS FOR HANDWORK

GENERAL INFORMATION

TARIFF ACT OF SEPTEMBER 21, 1922

PAR. 902. Cotton sewing thread, one-half of 1 cent per hundred yards; crochet, darning, embroidery, and knitting cottons, put up for handwork, in lengths not exceeding eight hundred and forty yards, one-half of 1 cent per hundred yards: *Provided*, That none of the foregoing shall pay a less rate of duty than 20 nor more than 35 per centum ad valorem. In no case shall the duty be assessed on a less number of yards than is marked on the goods as imported.

SCOPE OF THE INDUSTRY

The thread industry has two distinct branches, namely, "domestic" or household threads and manufacturers' threads. The designation "domestic threads" is an established trade term covering all the products sold through the retail dealer to the ultimate consumer for hand or machine sewing and art needlecraft. This branch includes not only sewing thread but also darning, mending, knitting, crocheting, tatting, and embroidery cottons.

The production of manufacturers' threads is the most important branch of the thread industry. The strides that have taken place in industry through the invention of sewing machines of highly specialized construction have brought about a great development in the factory production of articles formerly made in the home or by the small-shop artisan and craftsman. This development has resulted in a coordinate expansion in the thread industry to supply manufacturers with threads strong enough to withstand the complicated processes of stitching under the heavy tension of the high-speed, motor-driven factory sewing machines and suitable for the many types of machines and for different textile fibers and materials. Besides the great amount of general-utility thread employed in the manufacture of apparel and house furnishings, special threads are now prepared for use in making shoes, saddles, luggage, gloves, gas mantles, baseballs, automobile tops, upholstery, carpets, awnings, sails, flags, umbrellas, mail bags, overalls, corsets, straw hats, etc., and for the floral and the bookbinding trades. In addition there are also produced threads adaptable to particular operations such as buttonholing, serging, and blindstitching.

As a result of the various demands of the trades, as well as the needs of the home seamstress, the manufacture of thread has become a specialized and complex industry involving the production of thousands of articles differing with regard to size, construction, twist, color, finish, put-up and yardage, quality, and brand.

COTTON SEWING THREAD

Definition.—Cotton sewing thread may be defined as a smooth, evenly spun, hard-twisted, ply or cable yarn, treated by special finishing processes to make it resistant to abrasion in its passage through the eye of a needle and through materials in seaming and stitching operations.

Construction.—Sewing threads for both domestic and manufacturers' use may be either plain laid or cable laid. Special threads for the shoe industry may also be braided. In plain laid, sometimes called "straight-doubled" threads, a number of ends of single yarns are by one operation twisted into a ply yarn. In cabling, on the other hand, there are two twisting operations, the first making the ply yarn from two or more singles and the second making the cabled yarn or thread from three or more ply yarns. Certain industries demand the cable laid, but threads for ordinary purposes are generally plain laid. The production of cabled threads, except for household use, is on the decline. For home consumption, however, the standard thread is cabled because of the diversified uses to which it is put in both hand and machine sewing. In handwork particularly, since a definite length of thread passes its full length through the cloth at every stitch, the amount of manipulation and wear which the thread undergoes is considerably more than in machine sewing work. Household thread is therefore given the extra doubling to make it hard and compact enough to prevent fraying.

Threads of a braided construction, which were developed during the war for the shoe industry, consist usually of 16 ends or strands of single yarn plaited together on a braiding machine instead of twisted together on a doubling machine. Braiding is employed to avert the stranding difficulties often met with in a thread with an improperly balanced twist when loose riders are picked up by the needle barb in the shoe machine or when the tension of the machinery is so heavy that the twist is backed up by the pressure.

Manufacturers' thread in plain-laid form for general sewing is produced in 2, 3, and 4 cord. The word "cord" is employed in the thread industry to designate the number of single ends composing the thread and is synonymous with the spinners' term "ply," the two words being frequently used interchangeably. For special industries, notably the shoe industry, requiring threads of exceptional strength, the cords range progressively up to 28, both in plain and cable construction. Household thread for hand and machine use is largely a 6-cord cabled product; domestic 3-cord plain-laid threads are for basting and for seaming operations in which security and durability are less essential requisites; a high grade of sewing thread, especially in the mercerized finish, is also now sold in 3-cord for the domestic trade.

Twist.—The direction of the twist in straight-doubled threads is always opposite to that inserted in the spinning of the single yarns from which the thread is made. When the revolutions of the spinning spindle have been toward the right, producing a single yarn with a so-called regular twist, the twisting spindles in the thread doubling operations are turned in the opposite direction, giving a thread with a left or reverse twist. Threads for manufacturing purposes are made with either left or right twist. Some industrial sewing ma-

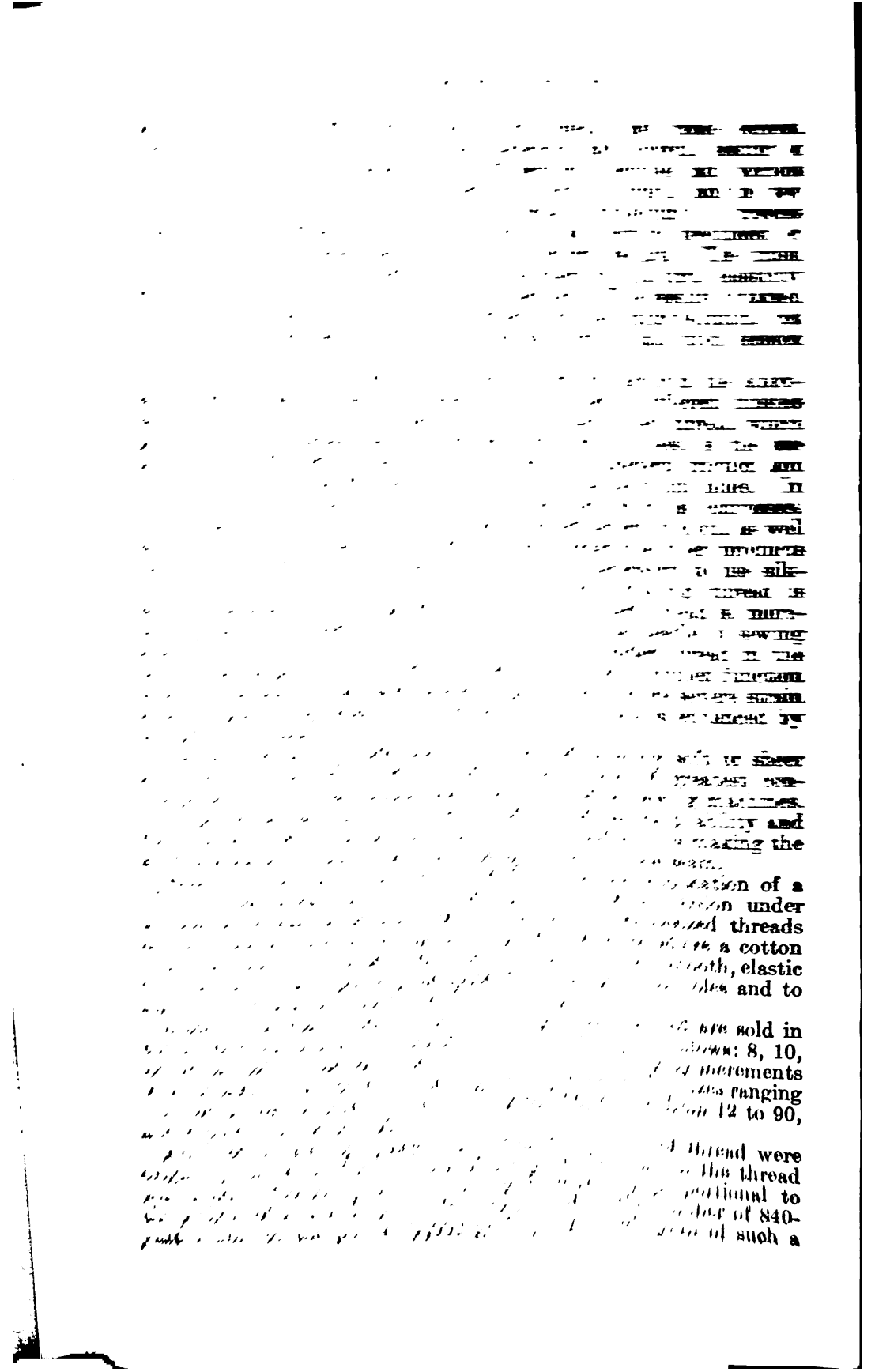
chines require a left twist for the upper or needle thread, when either a left or right twist may be used for the bobbin or looper. Multiple-needle machines often employ a right-twisted thread for one needle or set of needles and a left-twisted thread for another. This requirement necessitates the production of threads of both twists. The bulk demand is for the left twist, which is the standard in the sewing-thread industry, and unless otherwise specified by a consumer this is the twist supplied.

In cabled threads, such as 6-cord household thread, there are three twists, the first imparted in the spinning of the single yarn, the second in the ply, and the third in the cabling. The two methods of inserting the doubling and cabling twists are as follows: (1) Single yarns may be doubled into the ply in the same direction as in spinning, that is, to the right; this is designated "twist on twist." The finishing twist which cables the plied yarns is then inserted directly opposite the two preceding twists, making it regular-regular-reverse, or hawser twist. (2) A 6-cord thread may be made by altering the twist with each doubling, making the twist regular-reverse-regular, or cable twist. This twist is not successfully used for sewing thread, but is employed for the 6-cord crochet cotton known as cordichet or crochet twist. Six-cord sewing thread is made "hawser twist," though ordinarily it is referred to under the broader term "cable twist."

The amount of twist to be inserted in the spinning and in the doubling of the yarns is a technical detail of considerable importance in the production of high-grade thread. The twists must be properly balanced in order to prevent the thread kinking at the eye of the needle. The turns of twist per inch to be inserted in spinning are based on the square root of the yarn number, and the turns of twist to be inserted in doubling are based on the square root of the equivalent yarn number (obtained by dividing the single-yarn number by the ply) times a twist constant. The selection of the correct twist constant is a matter of judgment and involves consideration of various factors such as the length of staple of the raw cotton, the structure of the thread, and the use for which it is intended. In the case of straight-laid sewing thread for general consumption the ply-twist constant is usually about 5½. Using this twist constant, a 3-cord thread made of 30s singles, for instance, would have 5½ times 3.16 (the square root of 10, i. e., 30 divided by 3), or 17.38 turns twist per inch. The ply twist in ordinary 3-cord sewing threads ranges from about 16 to 30 turns per inch.

Finishes.—Threads, other than the natural grey, are made in three standard finishes: (1) soft or dull; (2) "silk," also called polished, hard, or glacé; and (3) mercerized. Between each of these classes are numerous intermediate finishes.

A soft-finished thread is one that has been treated with a sufficient amount of softening ingredients to give it slipping qualities and to overcome the harshness consequent upon the removal of the natural oils from the cotton in the bleaching and dyeing process. To obtain a silk-finished thread, a special dressing consisting of a combination of ingredients such as beeswax, gum arabic, paraffin, starch, and white soap, is applied to lay the fuzzy projecting fibers into the body of the thread. The polishing process works the ingredients into the thread and gives luster and smoothness. Formulas for sizing com-



size that a hank of 840 yards weighs 1 pound, or a unit-testing section of 120 yards (one-seventh of a hank) weighs 1,000 grains, is designated as No. 1. If 120 yards weigh 500 grains, or two hanks consisting of 1,680 yards weigh a pound, the yarn is No. 2, or one-half the size of No. 1. Thus a unit of 120 yards of single yarn weighing 25 grains would be one-fortieth of the size of a No. 1 yarn and would be called No. 40 yarn. A pound of No. 40 yarn would contain 40 hanks and would therefore run 33,600 yards to the pound (forty times 840). The number or count of any cotton yarn is obtained by weighing a testing skein of 120 yards, called a lea, and dividing the weight in grains into 1,000. For a ply yarn the resultant is multiplied by the number of ends to find the count of the component yarns. The number of yards per pound is determined by multiplying the yarn count by 840 and dividing by the ply.

In the early history of the thread industry 3-cord thread was the first commercial product, and manufacturers numbered it according to the size of the yarn from which it was made. Thus a 3-cord No. 30 thread was made from three strands of 30s single yarn twisted into one. In actual proportions the 30 3-cord thread was equivalent to a single strand of No. 10 yarn, as it would run the same number of yards to the pound. With the introduction and development of other cords or plies of sewing threads, such as 2, 4, and 6 cord thread, the system of numbering was not changed and the 3-cord thread became the standard for all. In order, however, to make the threads of the same ticket number, but of different plies, equivalent in diameter or circumference to the 3-cord, to permit their passage through needles with the same-sized eye, it became the practice to vary the size of the yarn from which the thread was made. As a result, the number of yards to the pound of thread of the same ticket but of different plies remains constant under this system. A 3-cord No. 30 thread, therefore, being made from 30/3 yarn measures 8,400 yards to the pound, and is equivalent to a 10s single yarn. To obtain this same amount of yardage in a 2-cord size 30 thread, two plies of 20s yarn would be employed; in a 4-cord size 30 thread, four plies of 40s; and in a 6-cord thread of the same ticket number six strands of 60s. In this instance the 2-cord, 3-cord, 4-cord, and 6-cord are all labeled with the same ticket No. 30 and are composed of different sizes of yarns, ranging from 20s to 60s, according to the number of ends in the thread. Since all of them measure 8,400 yards to the pound, they all fit the eye of the needle adapted to size 30 3-cord thread.

In ordinary 3-cord sewing thread, from No. 16 to No. 40, the labeled ticket number coincides with the yarn number from which the thread is made. Above size 40 there is a departure in the uniformity of the system, and the numbering is an arbitrary process. Size 50 3-cord thread is made nominally from 45s yarn instead of 50s yarn, size 60 thread from 50s yarn, size 70 thread from 60s yarn, and so on up to 110 ticket size. Above size 50, therefore, and up to size 110, there is a differential of 10 between the ticket size and the yarn number.

Six-cord thread between ticket sizes 16 and 50 is made from yarns twice as fine as the 3-cord bearing the same number. Above size 50 the differential of 10 enters into the numbering of 6-cord as well as 3-cord threads. While a 3-cord thread bearing ticket size 60 would

be made nominally from 50s yarn, the yarn used for a 6-cord thread size 60 would not be exactly double the ticket size, but would be 110s instead of 120s.

Although the system as outlined above is the basis of the nominal standards for the yarn sizes entering into the ticket numbers of thread, individual manufacturers do not strictly adhere to it in practice. The yarn from which the thread is made usually varies several counts below the theoretical standard. This divergence and lack of conformity may be attributed to the difficulty of adhering to the nominal basis because of variations in the constituency of the yarn in the technical processes of manufacture into thread. As the sizes of yarn are based upon the grey, subsequent treatment such as boiling off, bleaching, dyeing, twisting, gassing, and mercerizing not only affect the properties of the yarn but alter the yarn count. To make up for the gains or losses resulting from these various processes, the manufacturers start with a coarser grey yarn than called for, since the grist will come up to that required for the thread in the final product. Because of this permissible deviation from the theoretical standard in the yarn sizes which comprise the ticket numbers for the various plies or grades of thread, the following table is presented to show the average used among various manufacturers of thread in the United States.

TABLE 1.—*Nominal standard and average count of yarn used by representative manufacturers in the United States for principal cotton threads in standard sizes*

Ticket number	3-cord thread		4-cord thread		6-cord thread	
	Average count of natural grey	Nominal standard	Average count of natural grey	Nominal standard	Average count of natural grey	Nominal standard
16	15	16	20	22	30	32
20	18	20	26	27	38	40
24	22	24	30	32	47	48
30	28	30	37	40	57	60
36	33	36	43	45	67	72
40	37	40	47	50	76	80
50	42	45	56	60	96	100
60	47	50	66	70	106	110
70	56	60	76	80	115	120
80	66	70	86	90	125	130

That yarn numbers do not measure up to the theoretical standard is not, therefore, an indication of misrepresentation. It is the necessary result of the technicalities of the industry and the attempt to make the threads of different plies but the same ticket number correspond to the same diameter, in order to permit their passage through the same needle with approximately the same tension.

Numbering of mercerized thread.—Mercerized cotton threads for manufacturers' use in both 2-ply and 3-ply are numbered according to the standard used in numbering silk thread. In this system the variable lengths of silk per ounce are designated arbitrarily by alphabetical letters, ciphers, or series of ciphers, as shown in the following table:

TABLE 2.—*Typical system of numbering mercerized cotton thread ("ounce goods")*

Character	Equivalent ticket number of unmercerized cotton (approximate)	Nominal yarn count from which made	Character	Equivalent ticket number of unmercerized cotton (approximate)	Nominal yarn count from which made
0000	80	70	D	24	20
000	70	60	E	20	16
00	60	50	EE	18	14
0	50	40	F	16	12
A	40	36	FF	12	8
B	36	30	G	10	6
C	30	24			

The nominal yarn counts used by different manufacturers vary, but the insertions in the table above are representative of trade usage.

Numbering of cotton-welt thread.—The sizes of heavy cotton threads used for sewing welts on shoes follow the system employed in the numbering of heavy linen welt threads. The ordinary size of the single bleached linen welt yarn is 19½ lea or 20 lea, and the ticket numbers are based on the number of cords in the thread. A No. 6 linen-welt thread consists of six cords or plies, each being composed of size 19½ lea. The present practice of the cotton-thread manufacturers is to match the diameter of the cotton-welt thread to the linen. In straight-laid thread this is done by using a size 8¼ singles cotton yarn which corresponds approximately to the 19½ lea linen singles. The number of cords in plain-laid cotton-welt thread ranges from 3 to 14, and the various threads are ordered according to the cord. In braided welt thread, on the other hand, the number of cords or ends braided together is constant for all ticket numbers, 16 ends being the general usage. The yarn count of the individual ends, however, is varied to obtain different sizes of the finished welt thread. The ticket numbers applied to the cotton-welt thread correspond to those used for linen thread having the same diameter. A braided cotton-welt thread of ticket size No. 7 is, for instance, made up of cotton yarn of such a size that 16 singles equal in diameter seven strands or cords of linen yarn of size 19½ lea.

Colors.—Manufacturers of cotton thread and art neeedlework cottons follow the colors determined upon by the Textile Color Card Association and are therefore constantly shifting their color range from one season to another. Domestic sewing thread and handwork cottons are made in more than 200 colors, but each manufacturer, however, has a standard assortment of approximately 80 or 90 staple shades. The bulk of the colors are produced in sizes 50, 60, 70, and 80. The color card for manufacturers' threads is somewhat smaller than that for the domestic line, embracing 185 shades in the complete range. About 50 of these are standard shades in steady demand. A fairly large quantity of thread for industrial use is sold in the natural unbleached grey as a bobbin and looper thread in the manufacture of workingmen's garments and for serging operations.

Put-up and yardage.—Prior to the war the standard form of put-up for domestic cotton thread was the 200-yard length wound on small wooden spools. During the war period the quantity per spool was

reduced to 150 yards; the present quantity is 100 yards. The domestic thread is furnished to the retailer in wooden cabinets containing 25 or 50 dozen spools of assorted ticket numbers, in the proportion of about 70 per cent white and 30 per cent black. The size in greatest demand is ticket No. 50, which represents about 40 per cent of the total number of spools in the cabinet. Nos. 40 and 60, the next in demand, comprise approximately 20 and 18 per cent of the total; Nos. 36 and 30 constitute about 5 per cent each; and Nos. 8, 10, 12, 16, 20, and 24 about 2 per cent each of the total. Colored domestic threads are packed in boxes of a dozen spools of one size and color, and in 5 dozen cartons containing 2 spools each of 30 shades or 3 spools each of 20 shades.

Domestic threads are also marketed in 200, 250, 500, and 800 yard spools for basting, millinery, and general sewing, and on 50 and 75 yard spools for special uses such as carpet and button stitching.

Another form of put-up for home consumption is that in the so-called "thread lengths" composed of threads of assorted colors braided together in a flat, ribbonlike band from which the thread may be pulled out as needed.

Manufacturers' thread for ordinary sewing purposes in soft and silk finishes is put up in 500, 1,200, 3,600, 4,800, 6,000, 7,200, 9,600, and 12,000 yard lengths on paper tubes, cones, and wooden spools called jumbo or bull spools. The latter holding the two maximum yardages is the most expensive, owing to the greater winding costs and the high outlays for the white birch wood for the spools. Since the discarded spools are not refilled, the initial cost is not compensated for by repetition of use. They are now being superseded more generally by winding receptacles of papier mâché, which insure better delivery on the sewing machine and greater elasticity. Tubes are a popular form of put-up for silk-finished threads. Cones are most generally employed for soft-finished threads. The thread manufacturer generally follows the dictates of the consumers in the manufacturing trades, who often order a form of put-up in accordance with the customs and traditions of their particular industry, rather than with reference to economy in the thread manufacturers' production program.

Mercerized cotton thread, like silk thread, is known as ounce goods and is put on 1-ounce spools and 2-ounce tubes and also on one-half pound cones or tubes for manufacturing use.

Cabled lock-stitch thread and braided lock-stitch thread for sewing soles to welts in the shoe industry are sold by the pound and are called weight goods or cotton weights.

Another form of put-up for manufacturers is the ready-wound bobbin for sewing machines which require shuttles. First introduced in 1884, these ready-wound bobbins are now produced by four manufacturers in the United States. Because of the necessity of properly fitting the various types of shuttles in different kinds of sewing machines, there are on the market over a dozen styles of ready-wound bobbins and in each type is a full range of sizes, qualities, and colors, indicating again the wide scope of production necessary in the thread industry to meet all demands.

Quality and brands.—The strength, pliability, elasticity, smoothness, and uniformity of cotton sewing thread are the primary criteria of quality, and these characteristics of the thread are dependent on

the length and evenness of the staple or individual fibers in the raw cotton, the uniformity of spinning, the balance of the twist, and the finish applied. There has been no standardization of quality in the thread business, and the consumer is dependent almost entirely on the reputation and reliability of the manufacturer for a satisfactory product.[1] A number of large manufacturers who maintain quality standards in their output have a system of brand names for different classes or qualities of their thread. There are four or five categories of quality known to the consumer under the brand name rather than the class number, the brand standing for standardized merchandise made from a certain type and quality of cotton. The standard 3-cord thread is generally made in all qualities; 2-cord in three; while 4-cord and 6-cord are produced as a rule in only the first quality. There are, however, some limited quantities of second-grade 4-cord on the market. Practically all the qualities or grades of thread are made in the full range of sizes for each cord.

The production of different qualities of thread is the result not only of a desire on the part of the manufacturers to cater to the different purchasing powers of their various customers but of the necessity for different grades of thread for different purposes. As mentioned before, the price and ultimate use of the garment or articles to be sewn, the kind and density of the fabric or material of which it is made, the construction, appearance, and strength of the seam, and the number of plies or thicknesses of material in the seams, the type of stitch employed (shuttle, chain, double locked, overedge, flat seam, etc.), the number of stitches per unit length, and number of rows of stitching per seam are all factors which have a bearing on the quality of the thread to be employed. Different combinations of thread are also required for the needle and for the bobbin or looper in sewing machines. The under thread in the bobbin or looper reaches the fabric with its full strength and in general may, therefore, be of 20 to 25 per cent finer quality than the upper thread and frequently of one less ply. In the formation of the shuttle stitch the needle thread which thrashes through the eye of the needle from 30 to 80 times before passing a given point is impaired at least 18 to 20 per cent by chafing before reaching the stitch. To stand the strain of such heavy friction, the upper thread must be either of a higher grade cotton or heavier in ticket size than the bobbin thread. In the formation of the chain and double-locked stitch the upper thread passes through the eye of the needle only once, and therefore is not chafed; the under thread for stitches of the latter construction is, however, considered to be reinforced at least twofold by being laid in a triple series in the formation of the loops and hence may be from two to three sizes finer than the needle thread. Some manufacturers recommend that the under thread be approximately one-half the size of the top thread of the same quality.

Number of brands.—A directory of cotton-thread brands in the United States, compiled in 1925 by the Cotton Thread Association (Inc.), listed nearly 1,150 trade-marked brands reported by 67

[1] An important development of recent years is the tendency among big users of thread to test their thread purchases as to size, strength, yardage, and quality, instead of relying on the brand or trade-mark and the guaranty of the maker. Some large companies not only disregard the value of established trade-marks entirely, but as a matter of policy insist on buying goods put up plain without brand marks. This materially affects the nature of the thread business, making cotton thread more of a staple commodity than a proprietary article.

companies. As these firms represent less than one-third of the tota number of active producers and miscellaneous distributers, the aggregate number of brands on the market probably amounts to several thousand.

This multiplicity of brands is in some degree the outcome of the position of the jobber in the distribution of the thread. Many so-called thread producers are in reality jobbers acting as converters who purchase yarn from various mills and pass it around among bleachers, dyers, and winders for the various operations necessary in the conversion of yarn to thread. The amount of converting which a jobber handles as a part of his business may vary from mere spooling and labeling to almost all the processes of thread making except the actual spinning of the yarn. The jobber controls the labeling of the thread which he distributes to the retailer or consumer under his own trade-mark.

Localization of demand.—The conservatism of thread consumers and their reluctance to change from any article to which they have become accustomed has brought about localization of demand for particular brands. This is especially true of domestic threads. As a result of this adherence to tradition and custom, the two largest manufacturers of domestic thread, with virtually the same scope of output, have well-defined fields of sales. The large cities of the East have become almost the exclusive market for the products of the one; the small towns of the South and Middle West the sales area for the other.

HANDWORK COTTONS

In addition to the production of sewing thread for hand and machine work, the so-called "domestic" branch of the thread industry includes also yarns known as handwork cottons which are used for darning, mending, knitting, crocheting, tatting, couching, embroidering and general art needle work.

Darning and mending cottons.—Darning and mending cottons are soft-spun "grouped" yarns consisting of 2, 3, or 4 ends of 2-ply yarn laid parallel in a process of multiple winding. Although the terms darning and mending are synonymous and interchangeable in the trade, the word "darning" is more frequently used to designate the plain, unmercerized cottons for coarse work. Mending cottons, on the other hand, generally denote the better grade, higher priced, mercerized variety, suitable for fine repair work on lisle and silk hosiery, and adapted also to embroidery as well as for padding in the embroidery of monograms or conventional motifs.

Darning cotton usually consists of 3 or 4 ends, while mending cotton, as a rule, is composed of 2 or 3 ends. Plain, unmercerized, darning cotton is made from 24s to 30s 2-ply yarns, whereas mercerized mending cotton is generally made from 34s to 40s 2-ply yarns.

Papier-mâché spools, balls, or cards carrying various yardages and a varying number of ends are the popular forms of put-up for darning and mending cottons. One brand is wound on cubes, a patented form of put-up. Probably the item of greatest consumption in the plain darning cotton is the 45-yard put-up consisting of four ends of 2-ply yarn. It also is produced in other forms such as 30-yard and 45-yard put-ups with 2 ends of 2-ply; 30-yard, 3 ends of 2-ply; 25-yard, 4 ends of 2-ply. In mercerized mending cottons the

pre-war put-ups were 30 and 36 yards, 4 ends; at present they are manufactured in the 2-end and 3-end form running 45, 50, 75, and 100 yards to the ball. There is also a 75-yard, 4-end put-up.

No uniform practice formerly prevailed in the trade with regard to the labeling of darning and mending cottons. The construction of the yarns was designated by some manufacturers as the number of ends and the number of plies per end; by others as the total number of strands, for instance, 4 ends of 2-ply yarn being indicated as an 8-ply yarn. The linear length per ball or spool was specified by some producers as the yardage of an individual strand and by others as the aggregate yardage of all the strands. This lack of uniformity in labeling worked disadvantageously to that element of the trade which reckons quantity not on the total yardage of the individual single yarns, but on the running yardage of the grouped yarn as it unravels from the ball. It also proved misleading and confusing to the consumer. To correct the inequalities resulting from this difference in trade practice, a majority of the manufacturers, estimated to produce 90 per cent of the mending cotton in the United States, adopted in a conference held in September, 1925, under the auspices of the Federal Trade Commission, the following unanimous resolution:

Resolved, That in the marking, labeling, or branding of mending cotton, the following and no other, with reference to the yardage, ends, strands, or ply, shall be marked on the package or ball and in the order stated: The yardage as it comes off the ball, or package; the number of ends; the number of plies per end.

This action taken by the industry was approved by the Federal Trade Commission and the requirements prescribed by the terms of the resolution were made effective as of February 1, 1926.

Knitting cottons.—Knitting cotton, so-called, is an unmercerized multiple-ply yarn of soft construction put up in ball form. Unlike darning cotton, knitting cotton is composed of but one end which consists of 3 or 4 single yarns doubled together with a slight twist. As knitting cottons are usually twisted dry they retain a fuzzy appearance and a woolly feel. Knitting cotton comes in sizes 2, 6, and 8 and rising progressively by even numbers on up to 24. They are used for knitting wash cloths, old-fashioned bedspreads, bags, children's hose, etc.

Crochet cottons.—In general there are two classes of crochet cottons, (1) the cabled, six-cord yarns, known in the trade as cordonnet, cordichet, crochet twists, etc., and (2) the 2-ply yarns, single twist.

The cordonnet cottons are firm, even, hard-twisted yarns, spun of high-grade, long-staple cotton, and are made principally in the mercerized finish. They consist of 3 ends of 2-ply yarn, twisted in two operations in the form of a cable. The ball form is a standard put-up for crochet threads. The numbering is arbitrary following the usage established abroad by the pioneer needle-work yarn manufacturers, the Dollfus-Mieg Co. of Mulhouse, Alsace. The common sizes are 3, 5, 10, 15, and 20, increasing by increments of 10 to 100 (size 90 omitted). Foreign yarns of this type are made also in coarser sizes and in the three fine sizes, 120, 150, and 200. Cordonnet cottons are primarily used for the crocheting of laces and insertions, lingerie edgings, Irish crochet, etc. Size 70 is put up in a small ball for tatting.

The most important of the 2-ply crochet yarns is the "pearl cotton," the anglicized name for the French "perlé" which is also frequently employed as a design ation for this type of cotton. Pearl

cotton is used not only for crocheting but also for counted-stitch embroidery, and for knitting by hand or machine. It consists of two single ends twisted together with a somewhat loose twist in a rope or cordlike effect. It is put up in both skeins and balls in sizes 3, 5, 8, and 12 following the cotton system of yarn numbering. Another 2-ply floss crochet resembling closely the finer sizes of perlé is put up in ball form in one standard size corresponding to a No. 10 2-ply yarn.

Embroidery cottons.—There are a number of so-called embroidery cottons differing from each other in the degree of twist and in the number of ends or plies of which they are composed. They may be conveniently divided into two groups as follows:

(1) The single-twist yarn, composed of two or more singles twisted together into a 2-ply or a multiple-ply yarn.

(2) Stranded, dividable cottons.

The 2-ply yarns for embroidery include the pearl cotton and crochet floss mentioned above under the category of crochet cotton. Pearl cotton is a large item of consumption for heavy types of embroidery such as hardanger work, net darning, Swedish weaving, French knots, cross-stitch, canvas work, and general embroidery on napery, household linen, and clothing. It is also used for making passementeries such as fringes, cords, and edgings and is employed as a substitute for silk cord by printers for programs, fancy cards, brochures, etc. Other 2-ply embroidery cottons are produced with a slacker twist than pearl cotton and are made in three sizes, rope, medium, and fine, for eyelet work and solid embroidery.

Couching yarn, used for a "tacking-down" stitch, large French knots, and braiding designs, is an example of a heavy 3-ply embroidery cotton.

There are several varieties of 4-ply embroidery cottons, such as the fast Turkey-red marking and monogram cottons made in sizes running in even numbers from 6 to 24. Another example of a 4-fold embroidery yarn is a so-called Broder or convent cotton which comes in sizes 16, 18, 20, 25, 30, 35, 40, 45, 50, and 60, and is designed for fine embroidering of monograms, eyelet work, and decorative stitching on infants' clothing, handkerchiefs, lingerie, household linens, and other articles of fine construction such as Madeira work, Porto Rican, and Philippine embroidery.

The stranded cottons used for almost all kinds of embroidery, cross-stitch, smocking, and tapestry work, and as a padding thread and foundation for monogram embroidery, are made up of three or more strands of 2-ply yarn, laid parallel, and given a twist barely sufficient to hold the strands together. The 3, 4, and 6 strand embroidery flosses are made in one size in skein form. The 6-strand embroidery cotton is also known in the trade as mouliné, conforming with the French usage. It may be used as a whole or divided into one or more strands, according to the effect and weight of the embroidery desired. These stranded flosses, which, in construction and twist, resemble the better grade mercerized mending cottons, are used interchangeably with them in the staple colors.

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COTTON SEWING THREAD FOR MANUFACTURERS' USE

PLATE NO. 1

1. Cushion-wound tube, 4-cord; used largely by shoe factories for top stitching
2. Spool of 12,000 yards, 3-cord; for factory use in the manufacture of shirts, etc.
3. One-pound cone, a put-up used by the manufacturing trade
4. Ready-wound bobbin; used by the manufacturing trade as an under thread in the shuttle of the sewing machine

Photographs courtesy of the American Thread Co.

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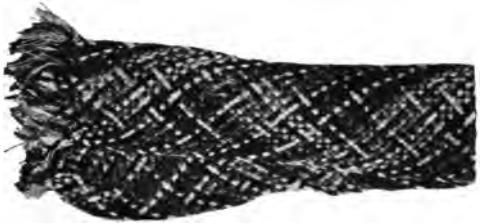

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HOUSEHOLD SEWING THREAD

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DARNING AND MENDING COTTONS

PLATE NO. 2

1. Carpet and button thread, 6-ply, 1-throw, 75-yard wooden spool
2. Basting thread, 3-cord, size 40, 200-yard wooden spool.
3. Mercerized sewing plait, flat braided of 36 groups, each containing 8 ends of 3-cord sewing thread in needle lengths; 25 shades
4. Sewing thread, 3-cord, size 50, 100-yard wooden spool
5. "Lustre twist," 6-cord, size A, 300-yard wooden spool
6. Mercerized darning cotton, 4 ends, 2-ply, ball of 75 yards
7. Plain darning cotton, 4 ends, 2-ply, papier-mâché spool of 45 yards
8. Mercerized mending floss, box of 10 spools of 10 yards each in assorted colors; 1 end, 2-ply
9. Mercerized mending cotton, 2 ends, 2-ply, wound on 75-yard papier-mâché cubes
10. Mercerized mending floss, 3 ends, 2-ply, ball of 45 yards

Photographs made by U. S. Bureau of Standards

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CROCHET, TATTING, AND KNITTING COTTONS

PLATE NO. 3

1. Pearl cotton, 2-ply, size 3, mercerized, skein of 15 yards
2. Pearl cotton, 2-ply, size 5, mercerized, ball of 200 yards
3. Crochet cotton, 2-ply, mercerized, papier-mâché spool of 100 yards
4. Crochet cotton, "Cordonnet special," 6-cord, size 50, mercerized, ball of 157 yards
5. Tatting cotton, 6-cord, size 70, mercerized, ball of 55 yards
6. Crochet cotton, 2-ply, mercerized, ball of 75 yards
7. Knitting cotton, 4-thread, size 4, ball of 45 yards

Photographs made by U. S. Bureau of Standards

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EMBROIDERY COTTONS

PLATE NO. 4

1. Mercerized embroidery cotton, 2-ply slack twist, skein of 16 yards
2. Pearl cotton, 2-ply, size 3, mercerized, skein of 16.4 yards
3. Embroidery rope, 2-ply mercerized skein of 7 yards
4. Stranded embroidery floss, 4 strands, 2-ply, mercerized, ball of 25 yards
5. Turkey-red embroidery cotton, 4-ply, size 10, small wooden spool of 30 yards
6. Six-strand floss, 2-ply, size 25, mercerized, ball of 28 yards
7. "Art thread" (6-strand floss), 2-ply, size 25, mercerized, skein of 9 yards
8. Embroidery cotton, labeled "Coton floche a broder," 5-ply, size 18, mercerized, skein of 87.4 yards
9. Broder cotton, 4-ply, size 20, mercerized, skein of 20 yards

Photographs made by U. S. Bureau of Standards

DOMESTIC PRODUCTION

Raw materials.—The raw cotton which enters into the production of thread yarns is a most important factor in the making of a high-grade cotton thread. The length, regularity, and uniformity of the staple of the cotton determine to a large extent the tensile strength of the thread. With the exception of five large companies equipped with spinning mills for handling the manufacture of the raw cotton into thread yarns, the majority of the thread concerns purchase their yarns in the open market or from yarn mills which spin on contract in strict accordance with specifications. The thread yarns imported are only a minor item, comprising for the most part fine counts for the production of household threads or gassed or processed yarns for occasional specialties.

Cotton thread of the better quality was formerly manufactured almost exclusively from yarns made of sea-island cotton, but since the decline of the crop yield, consequent upon the ravages of the boll weevil, Egyptian cottons have been substituted for sea-island in the manufacture of the higher grades of thread. At the present time about 80 per cent of the first-grade threads are made from imported Egyptian cotton.

The best Egyptian cotton consumed in thread manufacture is the Sakellarides or "Sak" cotton, the longest of which is about $1\frac{9}{16}$ inches in length. It is made into thread yarns ranging from Nos. 8 to 140, the low counts for the manufacture of shoe threads and threads for the bookbinding trade, where strength is a primary requirement, and the high counts for fine threads for such purposes as handkerchief hemstitching. Size 140 is the maximum in regular thread production, sizes exceeding this being specialties. The medium length Sakellarides Egyptian cotton averaging about $1\frac{1}{2}$ inches in staple is, as a rule, used for threads ranging from sizes 20 to 80; the shortest Sakellarides with a staple from $1\frac{5}{16}$ to $1\frac{7}{16}$ inches in length is used in thread yarns ranging from 20s to 60s. As the various grades of Sakellarides cotton have exceptional mercerizing properties, they are also the principal material used in the manufacture of the fine and better grades of crochet and embroidery cottons. While Sakellarides cotton is generally combed in the process of spinning, there is an appreciable amount of carded "Sak" cotton consumed in the manufacture of thread for use in the sole-sewing operations in shoe factories.

Cotton-thread manufacturers employ also a large quantity of Egyptian uppers, which are lower in price than the Sakellarides, averaging only about $1\frac{3}{16}$ inches in length of staple. This type of cotton, both combed and carded, is used for general utility threads, both for manufacturing and household use.

Of the domestic-grown cottons, the acclimated Egyptian or Arizona Pima cotton and three staple lengths of Peeler cotton are used in the manufacture of yarns for the thread industry. Pima cotton is utilized as a substitute for Sakellarides, but owing to limited crop production, manufacturers of thread have found irregularity in quality and length of Pima staple, which increases spinning difficulties. The Pima variety, like Egyptian uppers, is adapted to the production of general all-purpose threads, both for industrial and domestic consumption.

The first staple length of Peeler cotton, averaging $1\frac{5}{16}$ inches, is used for thread yarns from 10s to 70s in size; the second, with a fiber averaging $1\frac{1}{4}$ inches, enters into the production of yarns running up to the 40s, while the third, averaging $1\frac{3}{16}$ inches in length of staple, goes into the coarse yarns not exceeding 30s. The second and third staple lengths of Peeler cotton are sometimes substituted for Egyptian uppers.

Methods of production.—Conversion of yarn into thread includes the following operations: (1) Cop winding and doubling; (2) twisting and cabling; (3) reeling; (4) mercerizing, bleaching, or dyeing; (5) spooling or hank winding; (6) finishing and polishing; (7) spool, tube, or cone winding; (8) inspecting, labeling, and packing.

Sewing-thread production begins with the cotton yarn in the form of singles as it comes from the spinning frames. In the first stage, cop-winding, the single yarn is wound, without twisting, on to spools or wooden cores called doubler bobbins. For a 2-cord thread, two ends of singles are drawn from the mule cops or ring bobbins and wound parallel; for a 3-cord and a 4-cord thread, three and four ends, respectively, are grouped together on the bobbin. For heavy threads composed of coarse yarns and plies or cords ranging from 4 to 12, the single yarn is wound one end to a bobbin. In the next stage the requisite number of ends from the doubler bobbins are combined and twisted into a ply yarn on a twisting machine. The first twisting may be done either with or without water troughs, according to the type of yarn used and the thread desired. In the wet twisting system, which is preferable for unmercerized thread, the thread passes over and under brass rollers immersed in water-filled copper troughs for the purpose of laying the fuzzy projecting fibers and "setting the twist." For cable threads the necessary number of plied ends are given a final doubling on a so-called finisher twister. The product is then ready for the sequence of finishing operations such as bleaching, dyeing, and the special processes of dressing which prepare it for frictional resistance. Preliminary to these subsequent processes, it is reeled into skeins or hanks from the twister bobbins. After the completion of these operations the thread in hanks is spooled back again on supply bobbins preparatory to winding in final shape on cones, tubes, or spools for manufacturers' use and on small spools for household consumption. The goods are then ticketed, inspected, and packed in different size lots for shipment.

In the production of mercerized thread and handwork cottons the processes are generally as follows: (1) Beam warping, (2) gassing and mercerizing, (3) ball warping, (4) bleaching and dyeing, (5) beam winding, (6) quilling, (7) spooling, balling, or reeling.

Warping, the first stage, is a process in which the yarn from the twisting-frame bobbins is wound on to warpers' beams; the yarn is then passed over Bunsen burners for the purpose of singeing off the fuzzy projecting fibers. Following this it is mercerized, wound into ball warps, and subjected to the bleaching, dyeing, and drying processes. The yarn is then rewound on to beams preliminary to quilling. From the quills it is wound on spools or cones and is then a finished product, ready to be put up for the consumer. The thread or yarn on the cones supplies the spindles of the balling machines which wind the material on to small papier-mâché recep-

tacles or balls in convenient form for the seamstress. The yarn on the spools is reeled into small skeins for embroidery and crochet cottons. From this point on follow the processes of inspection, labeling, and packing.

Number of concerns.—Of the total United States production of manufacturers' thread, household spool thread, and handwork cottons, it is estimated that between one-half and two-thirds is the output of three large companies with international affiliations. The remainder is made by 35 or 40 moderate-sized manufacturers and by a hundred or more small converters. In addition, a large number of jobbers and wholesale supply houses buy unlabeled thread which they spool and distribute under their own brands and trade names, thereby entering into direct price competition with the bona fide thread producers.

Geographical distribution.—The thread industry is localized for the most part in New England, Massachusetts having the largest number of mills. Rhode Island, Connecticut, New Jersey, and Pennsylvania are the next States in order of importance. There are also a few scattered mills in Wisconsin, Illinois, Michigan, Ohio, and Indiana. New York City is the focal point for the large number of small manufacturing jobbers and converters who cater to the metropolitan trade.

Organization.—The thread industry is so organized that no clear-cut division in the processes of manufacture differentiates the converter from the legitimate manufacturer. Thread production is highly diffused, units in the industry ranging in size and complexity of organization from small "job shops" conducting a commission or partial assembling business to the three large companies, with a capitalization of many millions of dollars, each consisting of several separate mill units, with more or less specialization of product. In the middle ground, between the numerous small shop concerns and the three large companies, are the rank and file of the old-established thread manufacturers, the majority of whom carry on all thread-making operations except the spinning of the yarn from the raw cotton in the bale.

Specialization.—Two of the three large thread companies confine themselves chiefly to the manufacture of domestic or household spool thread, and embroidery, crochet, and other cottons for handwork. Their output in these lines comprises a high percentage of the entire United States production. The bulk of the production of the third company is manufacturers' thread, but a proportion of its output consists also of a full line of household and domestic goods. It has been estimated that 90 per cent of the household thread and handwork cottons of the United States are produced by the three large concerns, leaving 10 per cent of the business in the hands of the independents and a number of firms specializing in art needlework and stamped goods.[2]

Manufacturers' thread is the principal output of the independent concerns. Before the war it was estimated that about 30 to 40 per cent of the entire production of manufacturers' thread in the

[2] These companies handle the materials for fancy cushions, scarfs, bedspreads, bags, dresses, lingerie sets, curtains, neckwear, table linen, and other articles cut to pattern and stamped with designs ready to be embroidered. Stamped goods are usually put up for sale in "package outfits," each containing the sewn and stamped article with directions for working and with a sufficient quantity of the appropriate kind and color of embroidery cotton inclosed to execute the design.

United States was made by them;[3] the share now held by these companies is estimated to have increased to about 50 or 55 per cent of the total for the country. About one-half or less of the manufacturers' thread business is produced by the three large companies at the present time.

The other portion of the manufacturers' thread output in the United States is about equally divided between the 35 or 40 so-called independents and the many small converters situated in the metropolitan area. The latter generally specialize in one or more lines, and in most cases confine their production to a single type of soft-finished thread of cheap construction, primarily for the garment and cutting-up trade in New York or in outlying districts. Only one of the metropolitan converters markets a thread for household use.

Southern yarn mills have in recent years offered for certain industrial sewing and stitching purposes an appreciable volume of plain grey twisted thread yarn on cones that is not finished by special dressing processes, but which represents the regular run of the mill. This development, the result of improvements in sewing machines permitting the use of a more varied line of thread, is operating to make the spinning mills competitors of the thread manufacturers in certain channels of consumption, a class of competition unknown a decade ago.

Diversification of production.—The products of the thread industry have become in the past few decades more and more diversified. The constant improvement made in industrial sewing machines has gradually expanded the thread requirements of the various consuming industries. The thread manufacturer has as a result been obliged to study improvements in technique and to initiate innovations to meet these new developments. Moreover, it has become necessary for the thread manufacturer to cater more and more to the demands of consumers—demands which are often a matter of whim or preference, custom, or tradition. To meet competition, he must sell anything in the line of thread to any manufacturing customer in the form desired. The thread business has been likened to a public-service institution—a business of accommodation—since the degree of success of the thread manufacturer depends upon the service which the product gives and his facility to conform to customers' desires. Catering to public demand, which has become one of the essential requisites in this industry, has resulted in an enormous pyramiding of varieties of products. One of the large producers of thread manufactures over 50,000 kinds, quality brands, twists, finishes, sizes, colors, and put-ups, 26,000 different items being constantly kept in stock. A production numbering 10,000 articles of different qualities and descriptions is a moderate-sized assortment. Standardization of the industry with a reduction in the excessive diversity and an increase in interchangeability of thread has been attempted and is constantly being encouraged by thread manufacturers. Difficulties are encountered, however, in this work, owing to the multiplicity of needs of the consumers, their conservatism and arbitrary demands, and to competition between the manufacturers themselves.

[3] Petition in equity, *United States of America* v. *American Thread Company et al.*, unpublished decisions. June, 1914.

Comparison of yarn and thread industries.—Up to a certain point the cost of production of thread is determined by the same factors that apply to yarns—i. e., by the type and staple length of the cotton used, the method of spinning, the size, twist, finish, manner of winding, and length of the finished put-up. The two industries differ, however, in certain respects and their costs are more or less affected thereby. In the first place, the yarn manufacturers' machinery is equipped for large contracts, while the thread manufacturers' machines must be adaptable to changes for comparatively small lots of particular types of thread. In the second place, thread production requires attention to many fine details, and adjustments which must be made with precision to insure a high-quality output. The very success of the thread industry depends on the quality of the product, its service, and wear. Threads are subjected individually to constant strain under the high speed and tension of the modern power-sewing machines in factory production. Imperfections of any kind arising from uneven twisting or spinning or the lack of proper finish cause breakage in the machine and halt operations. Yarns, on the other hand, are not subjected individually to any such mechanical strain. Because of the necessity for quality standards, the thread industry requires more hand labor and more inspection than does either the yarn or cloth industry. Furthermore, the thread manufacturers, who pride themselves on high repute for quality standards, usually maintain service departments employing technically skilled persons who advise with manufacturing consumers as to the behavior of the thread in machines. Complaints are investigated and adjustments are made if the thread does not conform to specifications or if it developes imperfections. The service rendered by thread manufacturers in guaranteeing their product is a factor of importance in their expenses of production.

Distribution is a third factor of difference between the yarn and the thread industries. The average yarn manufacturer chooses his customers discriminatingly and sells his output in large units. The thread manufacturers, on the other hand, must serve the public and accommodate countless small manufacturers and retailers who buy from hand to mouth and in lots as small as 5 pounds or even less. The small lot distribution is one of the banes of the thread industry. As a result of the reluctance of consumers to stock up beyond their immediate requirements, the depot system of distribution has grown up within the thread industry. These so-called depots that the larger manufacturers maintain in various sections of the country are essentially branch houses with separate sales forces. Each depot has to carry a full line of stock of the different types and kinds of threads for distribution to purchasers in its area, and the total reserve stock thus carried by the manufacturers entails the tying up of large amounts of capital.

History of the industry.—Although it is probable that the manufacture of cotton thread was begun on an experimental scale in this country, coincident with the establishment of the industry in Scotland at the beginning of the nineteenth century, the historical records preserved do not mention industrial production in the United States until several years after importations of thread from Scotland commenced in 1820. The first foreign shipments of spool sewing cotton into this country were of three-cord thread. Technical developments

in the industry abroad in the two following decades brought about the manufacture and exportation of a 6-cord thread, which was superior in tensile strength, stability of twist, and attractiveness of put-up, to the earlier 3-cord variety. During this period several domestic mills initiated the manufacture of thread in a somewhat desultory manner, but production difficulties attendant upon the combing and spinning of fine count yarns of long staple cotton for 6-cord thread resulted in failures. For a long time, therefore, the domestic output was restricted to the coarser numbers of the more inferior 3-cord thread.

About the middle fifties mechanical and chemical processes were invented for finishing thread with a silk luster, a treatment of polishing which enhances the tensile strength and frictional resistance of the thread. This innovation, called a silk-finished or glacé thread, was introduced into the United States from Scotland. Because of the strength-increasing properties given thread by this new patented process, the hopes and ambitions of the few domestic producers who had persevered in the face of trying obstacles and discouragements were revived and thread production was given a new impetus.

At this time the Willimantic Linen Co., of Willimantic, a borough of Windham, Conn., which had for many years been manufacturing linen fabrics and threads, was compelled to turn its attention to cotton thread production owing to the shortage of flax after the outbreak of the Crimean War. This company purchased the manufacturing rights for the production of the glacé thread. It succeeded in building up a substantial business and took over the Willington Thread Co., of Willington, Conn., established in 1844, the first company to obtain a license for glacé thread in this country. The success of this new invention for finishing thread also stimulated a number of other manufacturers to devise new methods of processing threads with a satin luster. As a result several competing companies were founded in Pawtucket, R. I., and Fall River, Mass. By the beginning of the Civil War, the domestic industry had attained a promising position, and under the stimulus of war conditions the demand greatly increased.

Another opportune circumstance—the invention of the sewing machine—offered an additional incentive for the improvement and expansion of production of the comparatively new 6-cord thread which, up to this time, had been made in this country with meager success. As the 3-cord thread then produced did not possess the requisite tensile strength to withstand the friction of the sewing machine, the demand for the superior 6-cord thread for sewing-machine use grew to such proportions that the manufacturers in this country were obliged either to comply with the new market demand or retire from business.

The increase in tariff duties on cotton thread during the Civil War was the third influence to stimulate the growth of the infant industry. It had the additional result of attracting foreign capital to the United States. Branch mills were established in this country by several of the large European thread producers. The Clark Thread Co. of Scotland, founded a plant with the same name at Newark, N. J., which commenced operation in 1865. A few years later the firm of James Coats, of Paisley, Scotland, acquired the stock of the Conant Thread Co., at Pawtucket R. I.; in 1912 the firm name was changed

to J. & P. Coats (Inc.). In 1883, John Clark, Jr., & Co., not connected with the other institutions established previously, set up a mill in New Jersey under the name of Clark Mile-End Spool Cotton Co. About this time, James Chadwick & Bro. (Ltd.), another English company, began to operate a company at Jersey City.

Under the management of Hezikiah Conant,[4] who had supervised the Conant plant purchased by Coats at Pawtucket, the Willimantic Linen Co., which still retained that name in spite of being diverted entirely to the production of cotton thread, continued to expand. In its consolidation with the Willington Thread Co., as already mentioned, it had acquired the services of Timothy Merrick, who later became the founder of the Merrick Thread Mill, at Holyoke, Mass. The Willimantic Co. thus became at an early date a dominating factor in the industry, in a sense the parent company of the pioneer thread manufacturing concerns of the United States. Other companies were established about the period of the Civil War, the largest ones being the Hadley Thread Mills at Hadley, Mass., the Williston firm of East Hampton, Mass., and the Gardner Hall, jr., firm of South Willington, Conn. By 1890 there were 34 companies with a personnel of 9,220 and a capital of nearly $28,000,000.[5]

In the late nineties and the first decade of the present century the thread industry entered upon an era of consolidation both here and abroad. The Coats business at Paisley, Scotland, which had been incorporated in 1890 as J. & P. Coats (Ltd.), with a capital at that time of over $27,000,000, absorbed in 1895 the firm of Kerr & Co., of Paisley, and in the following year purchased its chief rivals, the Clark Thread Co., of Paisley, and the concerns of James Chadwick & Bro. (Ltd.), of Bolton, and Jonas Brook & Bros. (Ltd.), of Meltham. The Clark Thread Co. (Ltd.) had previous to this merger with the Coats interests acquired control in the United States of the Clark Mile-End Spool Cotton Co. of New Jersey. It took over also the Chadwick mill in Jersey City. Thus the three New Jersey plants, consolidated under the Clark Co. of Newark, became by the merger of the parent company of Scotland a part of the J. & P. Coats enterprise.

In addition to the amalgamation of the Coats and Clark interests, there occurred in 1897 the merger of a dozen or more thread companies in England into a corporation known as the English Sewing Cotton Co. (Ltd.), with a capital of $11,250,000. At the outset this new company became allied with J. & P. Coats (Ltd.), which took shares of the common stock, valued at approximately a million dollars, half of which was later sold. J. & P. Coats also extended financial assistance to the English Sewing Cotton Co. during a subsequent period of reorganization[6] of the affairs of the concern.

In the United States the first big merger of domestic companies was the American Thread Co. This concern was organized in 1898 to acquire title to the common stock, plants, and stocks in trade of 14 domestic companies. The disastrous price cutting at that time prevailing in the thread industry and the custom of large manufacturers of extending long-period credits to the trade—terms which the smaller firms were financially unable to duplicate—had brought these firms to the verge of bankruptcy. The severity of the competition

[4] Davis, W. T., *The New England States*, pp. 163–165.
[5] Report on Manufacturing Industries in the United States, Eleventh Census, 1890, Pt. III, p. 152.
[6] Macrosty, H. W., *The Trust Movement in British Industry*.

practically forced them into the position of being unable to refuse options to purchase their plants. The constituent companies in the consolidation were as follows:[7]

	Established
E. J. W. Morse Co.,[8] Boston, Mass	1834
Willimantic Linen Co.,[9] Willimantic, Conn	1854
Hadley Co., Holyoke, Mass	1863
The Warren Thread Co., Ashland, Mass	1865
Merrick Thread Co.,[10] Holyoke, Mass	1865
J. O. King & Co., New York, N. Y	1866
Barstow Thread Co.,[11] Providence, R. I	1866
The National Thread Co., Mansfield, Conn	1873
Glasgo Yarn Mills Co., Glasgo, Conn	1881
Kerr Thread Co., Fall River, Mass	1881
Morse & Kaley Manufacturing Co., Milford, N. H	1882
Glasgo Thread Co., Worcester, Mass	1883
The William Clark Co., Westerly, R. I	1891
The Ruddy Thread Co., Worcester, Mass	1891

By January, 1903, the above-mentioned companies were all dissolved and their property merged into the American Thread Co. The machinery and inventories of several of the smaller firms in the more remote localities had been transferred to the largest and most centrally located plants.

The following reasons were advanced for the consolidation [12] in the prospectus issued in 1898:

> The business of the above companies has for a considerable time been injuriously affected by excessive competition among themselves, and the cutting of rates having, during the past three years resulted in a very large portion of the trade being done below cost of production, it was realized that a complete consolidation of the various interests was necessary to insure renewed prosperity. * * *

The benefits to be derived by the union were set forth as follows:

> Where practicable, it is intended that at least one partner or one director in each of the undertakings acquired by the company shall continue in responsible management. The individual experience of those actively engaged in directing the various businesses will thus be combined for the benefit of all; but the management of all the businesses will be under one central control, and the disadvantage of carrying on the various processes of spinning, doubling, finishing, and spooling in each of the mills will be avoided by concentrating in each manufactory the particular work it is best suited to do. This will considerably cheapen production, whilst, on the other hand, very large savings will be effected in the expenses of distribution, which have been enormously heavy in the past, not only on account of each one of the 13 companies having a separate selling organization, but also through the keenness of their competition one with another, resulting in excessive expenditure in various ways, the free distribution of cabinets and other advertising matter alone amounting to a very large sum.[13]

The capital stock of the Willimantic Linen Co., the largest of the merging companies, had previous to the consolidation been acquired by the English Sewing Cotton Co. (Ltd.). In the financial transactions incident to the merger, the latter took over practically all the common stock of the American Thread Co., thereby securing almost the sole voting power in its affairs. J. & P. Coats (Ltd.) at the time

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[7] *Moody's Manual of Corporation Securities*, 1902, p. 1336.
[8] Including patent rights, machinery, and good will of the Morse Machine Co.
[9] Including spool factory in Maine and rights of birch and poplar stumpage.
[10] Including factory in Maine for manufacturing wood spools and packing cases.
[11] Including good will and trade-marks of Alexander King & Co.
[12] Report of the Industrial Commission on Trusts and Industrial Combinations, 1901, Vol. XIII, p. 36.
[13] Another important benefit was the elimination of trade abuses. All sizes of manufacturers' thread had been sold at one price, notwithstanding the wide difference in cost between the fine and heavy yarn counts. This unsound practice was abandoned in favor of a scientific selling list yielding approximately the same margin of profit on all items belonging to the same line or brand mark.

of the organization of the American Thread Co. applied for approximately $500,000 worth of preferred stock.[14] The acquisition of this block of preferred stock by Coats and the transfer of common stock to the English Sewing Cotton Co. (Ltd.) which, as already stated, had previously become financially allied with the Coats enterprise abroad, made the three most important thread companies in the United States, viz, the Clark Thread Co., of Newark; J. & P. Coats (Inc.), of Pawtucket; and the American Thread Co., of New York, connected in one way or another with the J. & P. Coats concern of Paisley, Scotland.

As a result of a suit in equity instituted by the United States Government, the financial relationship of the Coats business here and abroad with the American Thread Co. and the English Sewing Cotton Co. (Ltd.) was terminated in 1914. By a decision rendered in that year by the District Court of the United States for the District of New Jersey,[15] J. & P. Coats (Ltd.), James Chadwick & Bro. (Ltd.), and Jonas Brook & Bros. (Ltd.), of Great Britain; J. & P. Coats (Inc.), of Pawtucket, R. I.; the Clark Thread Co, the Clark Mile-End Spool Cotton Co., and George A. Clark & Bro., of Newark, N. J., together with the selling agency, the Spool Cotton Co., were jointly and severally enjoined from "acquiring, or, after January 1, 1915, from holding, directly or indirectly, any pecuniary or property interest whatsoever in the capital stock or other securities" of the American Thread Co., the English Sewing Cotton Co., or their sales organization, the Thread Agency.

Domestic production and consumption.—Statistics issued by the Bureau of the Census do not indicate the output of crochet, darning, embroidery, and knitting cottons put up for handwork, figures for these being merged with the statistics of yarn production. Census reports, moreover, fail to segregate the sewing-thread production for retail trade and production for industrial consumption. However, it is estimated by competent authorities in the industry that the quantity of sewing thread produced for the manufacturing industry is between two and two and one-half times the quantity produced for household use.

On the other hand, the value of the output of manufacturing thread does not bear the same ratio to the value of thread for household sewing because of the greater cost of the short-length put-ups in the production of articles for home consumption. Yet, in spite of this fact, the value of thread for manufacturers' use is approximately double that of thread and cottons for retail sale.

Production of manufacturing thread has assumed the lead quantitatively largely as a result of the technical improvement in industrial sewing machines which had made possible mass production of articles formerly made exclusively in the home. Needlework, which was a general and necessary occupation in the home a generation ago, has, with the changed economic status of women, fallen into comparative neglect. Dexterity in sewing has declined with the availability of large assortments of factory-made wearing apparel for men, women, children, and infants, as well as with the availability of house furnishings of all kinds in price ranges suitable for all purchasing con-

[14] Report of the Industrial Commission on Trusts and Industrial Combinations, 1901, Vol. XIII, p. 392.
[15] Petition in equity, *United States of America* v. *The American Thread Co. et al.*, unpublished decision, June 2, 1914.

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stituents. Moreover, much of the time of women nongainfully employed, released in recent years by the invention of labor-saving devices, has been diverted to other channels of activity. Modern conditions and standards of living and the pleasures now offered by the automobile, radio, and moving pictures have also lessened the time given to needle craft. Transitions in fashions have been another strong factor in the decline of cotton-thread consumption in the home. The simplicity of the mode and the narrow straight-line silhouette in vogue during the past few years have brought about a lessening consumption of household thread. Furthermore, the popularity of silk apparel has shifted some of the domestic demand from cotton to silk spool thread. With the declining demand for household spool sewing thread of cotton, the two large companies which practically control the bulk of this business in the United States are placing increased emphasis on production of an extensive range of handwork cottons, many of which were formerly imported.

The basic unit of sales and production in most thread mills is the number of dozens of 200-yard spools, or 2,400-yard units, the various types and put-ups of thread being all converted to this unit of length as a basis of computation. It is the consensus of opinion among large thread producers that a No. 36 three-cord thread, which averages theoretically 10,080 yards to the pound, represents a fairly accurate annual average size of all the different kinds of household and manufacturers' sewing thread produced in the United States for a period of years. Using this as a conversion factor, the production as reported by the Bureau of the Census in pounds has been converted to a yardage basis in order to facilitate comparison in a later section with the import statistics which are stated in units of 100 yards.

Table 3 gives the official figures for the value and pounds of the cotton sewing thread production of the United States for two decennial, four quinquennial, and three biennial censuses. The last two columns of the table have been computed to show the approximate equivalents, of the recorded pounds, in 100-yard units and in dozens of 200-yard spools.

TABLE 3.—*Cotton thread—Domestic production, 1890–1925*

[Source: Bureau of the Census]

Year	Value [1]	Pounds [1]	Approximate equivalent in 100 yards [2]	Approximate equivalent in dozens of 200-yard spools [2]
1890	$11,637,500	13,868,309	1,397,925,547	58,246,898
1899	11,908,671	15,907,058	1,603,431,446	66,809,644
1904	15,043,043	17,163,741	1,730,105,093	72,087,712
1909	20,516,269	23,700,957	2,389,056,466	99,544,019
1914	22,917,099	26,507,023	2,671,907,918	111,329,497
1919	55,009,176	26,441,943	2,665,347,854	111,056,161
1921	50,201,996	23,275,618	2,346,182,294	97,757,596
1923	55,311,320	31,645,537	3,189,870,130	132,911,255
1925	59,875,776	37,585,368	3,788,605,094	157,858,546

[1] Bureau of the Census.
[2] Conversion factor: 10,080 yards=1 pound.
[3] In 1870 production of 11,560,241 dozens of spool cotton was reported by the Census—the only year in which this unit of quantity was employed.

As indicated by these figures, thread production which amounted to almost 16,000,000 pounds in 1899 increased 50 per cent in the following decade and continued to expand, reaching approximately 26,500,000 pounds at the beginning of the war. While steadily on the upgrade during this 15-year period, it had not kept pace, however, with expansion in most other branches of the cotton industry, a fact which may be attributed in part to the effect of the consolidation of the producing companies on the more accurate approximation of supply and demand.

During the war nearly every thread concern increased its facilities for production and many new concerns were inaugurated, particularly in the manufacturers' thread business. The productive capacity, therefore, of the thread industry was considerably larger in 1919 than in 1914. Census figures, however, do not reflect an increase in production at the end as compared with the beginning of the war period. This was probably due to market conditions then obtaining, since a reduced output in 1919 as compared with pre-war conditions was also noted abroad. In the fiscal year 1918–19, the production of J. & P. Coats (Ltd.), of Paisley, was 20 per cent less by weight than in the year 1913–14.[16]

The depression in trade which affected the thread industry severely in 1920 reduced production in 1921 over 3,000,000 pounds as compared with the output reported at the previous census and brought it even below the figure for the year 1909. In 1923 the industry had recovered and production had advanced to 31,646,000 pounds. This was an exceptionally big year in the thread industry and according to manufacturers represented a market demand 10 per cent above average. Even this large putput was exceeded by the record production of 37,585,000 pounds in 1925. The production of cotton thread is considered by competent men in the industry to be at the present time far in advance of consumption. It has been estimated by one well-informed manufacturer that the total United States consumption, plus exports, of thread is at the present time only about 50 per cent of the amount which could be manufactured if all the thread companies operated to 90 per cent of their capacity without overtime work.

Production figures, other than those of the Bureau of the Census, are not available, as thread manufacturers, both at home and abroad, are extremely reluctant to divulge statistical information concerning the industry. Production data in particular are jealously guarded, and manufacturers are unwilling to cooperate in furnishing such information even to their own trade bodies. Although there were until recently two trade associations [17] devoted to the interests of the industry in the United States, neither of them compiled any statistics of production.

Production of darning, mending, knitting, and crochet yarns, for which no census figures are available, was carried on in the United States on a small scale prior to the war. There was virtually no production of mercerized hand embroidery cottons, however, as the demand was mainly for Alsatian and English brands.

[16] Great Britain Board of Trade Standing Committee on Trusts, Findings on the Alleged Existence of a Combine Among Manufacturers of Sewing Cotton, Feb. 3, 1919, p. 4.
[17] One of the trade associations, composed of New England manufacturers, disbanded in 1926.

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During the war, when imports of cotton handwork yarns were greatly curtailed, a number of American manufacturers seized the opportunity created by the war exigencies to produce a domestic substitute similar in put-up, method of numbering, and general appearance. On the renewal of European competition after the war, some of these firms found themselves unable to compete and discontinued this line of work; a few, however, have been more successful and have not only continued to maintain the footing they had acquired in the domestic market, but have carried on a small export business.

DOMESTIC EXPORTS

Extent.—Exports of cotton sewing thread and cottons for handwork were not recorded in Commerce and Navigation of the United States prior to 1918. The statistics available for 1918 to 1922 are an aggregate of both cotton sewing thread and crochet, darning, and embroidery cotton for handwork. In 1922, however, segregation was begun, making available figures for the quantity and value of the exports of both groups. These are shown in Table 4.

TABLE 4.—*Domestic exports of cotton sewing thread and crochet, darning, and embroidery cottons, 1918–1926*

Calendar year	Total sewing thread, and crochet, darning, and embroidery cottons		Cotton sewing thread		Crochet, darning, and embroidery cottons	
	Pounds	Value	Pounds	Value	Pounds	Value
1918	(1)	$2,824,776	(1)	(2)	(1)	(2)
1919	(1)	4,367,762	(1)	(2)	(1)	(2)
1920	(1)	4,471,617	(1)	(2)	(1)	(2)
1921	(1)	2,055,328	(1)	(2)	(1)	(2)
1922	1,944,640	2,034,732	1,653,184	$1,781,221	291,456	$253,511
1923	1,809,013	2,065,520	1,583,423	1,819,478	225,590	246,042
1924	1,534,873	1,772,668	1,405,768	1,599,698	129,105	172,970
1925	1,058,155	1,183,347	960,454	1,047,298	97,701	136,049
1926	1,422,669	1,439,862	1,299,269	1,280,158	123,400	159,704

[1] Not reported.
[2] Not separately reported.

In 1918 aggregate exports of sewing thread and of cottons for handwork amounted to approximately $2,825,000. In the two following years, 1919, 1920, there was a sharp advance in the value of exports. This increase, being coincident with the peak of inflation, is probably more a reflection of the higher price level obtaining at the time than an indication of any appreciable expansion in trade.

After 1920 there was a steady decrease to 1925, when the combined exports of sewing thread and cottons for handwork amounted to only $1,183,347, the lowest value in the eight-year postwar period for which statistics are at hand. In 1926 exports totaled $1,439,862 in value, showing an increase over the low record of 1925. The slump in exports above noted is indicated also in the quantity figures available since 1921. Exports, which amounted to about 1,945,000 pounds in 1922, declined to 1,058,000 pounds in 1925 and recovered to approximately 1,423,000 pounds in 1926.

It is interesting to note from Table 4 that while exports of sewing thread have fallen off in both quantity and value, their ratio to the combined exports of both sewing thread and handwork cottons has increased. While the exports of crochet, darning, and embroidery cottons represented in 1922 nearly 15 per cent of the total volume of exports of the two groups together, in the past three years they have averaged only 8.7 per cent of the total. Sewing thread, on the other hand, increased from 85 per cent of the total in 1922 to 91.6 per cent of the total in 1924, and this latter ratio, approximately, has been maintained in the two subsequent years.

Markets.—The largest volume of sewing-thread shipments from the United States goes to the Philippines, which take on an average between 40 and 50 per cent of the total exportable surplus. Exports to Canada, the largest foreign customer, generally amount to over one-fourth of the total. After these two, the most important purchasers in 1926 were Australia, which took about 8 per cent of the total, followed by Mexico with approximately 6 per cent, and China, Brazil, and Cuba with between 1 and 2 per cent each. The remainder is widely distributed among a large number of countries, none of which is an important purchaser individually. The exports of sewing thread consist largely of manufacturing thread, shoe thread being an important item, particularly in the shipments to Australia.

For the small amount of handwork cottons exported from the United States, the principal market is Canada, which imported 38 per cent of the total in 1922, nearly 45 per cent in 1923, 55 per cent in 1924, 33 per cent in 1925, and 37 per cent in 1926. In 1926 Argentina, Mexico, and the Philippines, in the order stated, were the next best markets. Tables 5 to 7, inclusive, indicate the principal markets for American-made sewing thread and handwork cottons.

TABLE 5.—*Cotton sewing thread—Domestic exports, by countries, 1922–1926*

Country	1922		1923		1924		1925		1926	
	Pounds	Per cent	Pounds	Per cent	Pounds	Per cent	Pounds	Per cent	Pounds	Per cent
Philippines	701,357	42.43	762,537	48.16	707,558	50.33	346,541	36.09	606,029	46.64
Canada	518,019	31.34	400,515	25.29	373,607	26.58	263,228	27.40	349,884	26.93
Australia	102,692	6.21	83,436	5.27	76,832	5.47	115,051	11.98	101,930	7.85
Mexico	153,986	9.31	96,571	6.10	89,546	6.37	64,412	6.71	73,812	5.68
China	5,800	.35	41,732	2.64	16,083	1.14	27,650	2.88	22,864	1.76
Brazil	8,997	.54	10,521	.66	8,623	.61	10,121	1.05	22,787	1.75
Cuba	22,859	1.38	21,618	1.36	20,695	1.47	15,665	1.63	17,058	1.31
United Kingdom	6,135	.37	7,286	.46	12,277	.87	20,446	2.13	12,293	.95
Argentina	19,472	1.18	27,520	1.74	16,739	1.19	10,174	1.06	10,218	.79
Chile	4,949	.30	7,577	.48	5,964	.42	8,845	.92	7,811	.60
Panama	11,527	.70	8,013	.51	6,909	.49	8,977	.93	6,147	.47
All other	97,391	5.89	116,097	7.33	70,935	5.06	69,344	7.22	68,436	5.27
Total	1,653,184	100.00	1,583,423	100.00	1,405,768	100.00	960,454	100.00	1,299,269	100.00

TABLE 6.—*Crochet, darning, and embroidery cottons for handwork—Domestic exports, by countries, 1922–1926*

Country	1922		1923		1924		1925		1926	
	Pounds	Per cent	Pounds	Per cent	Pounds	Per cent	Pounds	Per cent	Pounds	Per cent
Canada	111,676	38.32	100,433	44.52	70,653	54.73	32,549	33.32	45,986	37.23
Argentina	42,346	14.53	10,186	4.52	4,275	3.31	8,370	8.57	25,212	20.43
Mexico	22,003	7.55	29,795	13.21	19,729	15.28	15,904	16.28	12,664	10.26
Philippines	5,187	1.78	9,250	4.10	1,305	1.01	5,716	5.85	6,345	5.14
Brazil	1,338	.46	3,494	1.55	819	.63	1,189	1.22	4,277	3.47
Chile	18,336	6.29	5,830	2.58	2,304	1.78	4,513	4.62	3,865	3.13
Colombia	10,105	3.47	6,176	2.74	1,151	.89	4,042	4.14	2,583	2.09
Cuba	4,952	1.70	21,587	9.57	12,776	9.90	1,472	1.50	2,234	1.81
Australia			1,238	.55	1,382	1.07	8,626	8.83	2,076	1.68
Panama	7,851	2.69	4,544	2.01	3,397	2.63	3,264	3.34	1,839	1.49
United Kingdom	460	.15	9,294	4.12	1,103	.85	1,197	1.22	352	.29
All other	67,212	23.06	23,763	10.53	10,211	7.92	10,859	11.11	16,047	12.98
Total	291,456	100.00	225,590	100.00	129,105	100.00	97,701	100.00	123,400	100.00

TABLE 7.—*Total cotton sewing thread, and crochet, darning, and embroidery cotton for handwork—Domestic exports, by countries, 1922–1926*

Country	1922		1923		1924		1925		1926	
	Pounds	Per cent	Pounds	Per cent	Pounds	Per cent	Pounds	Per cent	Pounds	Per cent
Philippines	706,544	36.33	771,787	42.66	708,863	46.18	352,257	33.29	612,374	43.04
Canada	629,695	32.38	500,948	27.69	444,260	28.95	295,777	27.95	395,820	27.82
Australia	102,692	5.28	84,674	4.68	78,214	5.10	123,677	11.69	104,006	7.31
Mexico	175,989	9.05	126,366	6.99	109,275	7.12	80,316	7.59	86,476	6.08
Argentina	61,818	3.18	37,706	2.08	21,014	1.37	18,544	1.75	35,430	2.49
China [1]	7,055	.36	42,898	2.37	16,612	1.08	28,694	2.71	27,701	1.95
Brazil	10,335	.53	14,015	.77	9,442	.62	11,310	1.07	27,064	1.90
Cuba	27,811	1.43	43,205	2.39	33,471	2.18	17,137	1.62	19,202	1.36
United Kingdom	6,585	.34	16,580	.92	13,380	.87	21,643	2.05	12,645	.89
Chile	23,285	1.20	13,407	.74	8,268	.54	13,358	1.26	11,676	.82
Panama	19,378	1.00	12,557	.69	10,306	.67	12,241	1.16	7,966	.56
All other	173,453	8.92	144,870	8.02	81,768	5.32	83,201	7.86	82,199	5.78
Total	1,944,640	100.00	1,809,013	100.00	1,534,873	100.00	1,058,155	100.00	1,422,669	100.00

[1] Includes the following quantities of crochet, darning, and embroidery cottons not separately shown in Table 6: 1922, 1,255 pounds; 1923, 1,166 pounds; 1924, 529 pounds; 1925, 1,044 pounds; 1926, 4,837 pounds

Factors limiting exports.—In regard to domestic or household thread, the affiliation of two of the largest producers in the United States with J. & P. Coats (Ltd.), of Paisley, Scotland, and the connection of the third large concern with the English Sewing Cotton Co. (Ltd.), of Manchester, England, tend to make the output of sewing thread of the three principal companies in the United States serve primarily the requirements of the American market. The two British firms mentioned are vitally interested in international trade, exporting over 80 per cent of the output [18] of their home factories. One of them also maintains branch plants in various foreign countries which cater to the demand within the respective national borders.

A second possible cause of small exports is the fact that owing to the higher American wage scale, production costs in this country may be greater than abroad. Because of the general market shortage, a considerable amount of American-made thread was exported

[18] Great Britain Board of Trade Standing Committee on Trusts, Findings in Alleged Existence of a Combine Among Sewing Thread Manufacturers.

during the war and until European production returned to normal. When the European manufacturers, particularly the two British thread companies, were again in a position to reassert their former competitive strength, American exporters were under the necessity of relinquishing their temporary gains which had originated out of war exigencies.

In regard to handwork cottons, the relatively small exports from the United States are due to the heavy competition which the few American producers of these goods encounter in foreign-trade markets from the goods of certain Continental manufacturers, particularly the Dollfus-Mieg Co. of Mulhouse. Its products, trade-marked "D. M. C.," predominate in international trade in this line and have practically a monopoly in many markets. In countries having but few urban centers and a large agricultural population with low purchasing ability, price, not brand, is the first consideration. In such countries, the Dollfus-Mieg cottons, which sell for higher prices than competing foreign brands, have not obtained a permanent hold.

Several reasons have been advanced for the competitive strength of this Alsatian company. Established in 1746, it is, in the first place, virtually the pioneer in the field of embroidery cottons. The D. M. C. cottons have been used in Europe for generations and even in this country have been a household word for over half a century. This company has, moreover, in its long history, acquired an intimate knowledge of the peculiar trade conditions in each country, and established sales organizations and distributing depots in central points throughout Europe. The availability of large stocks in warehouses in these central locations increases this company's competitive strength by permitting the safe, quick, and inexpensive delivery of small-lot orders to wholesalers and retailers, who buy for immediate requirements, thus obviating delays in transmission through customs.

Another factor which has aided the Dollfus-Mieg Co. in establishing the popularity of its products is the quick response of the company to style changes. An American consul has stated:

> The variations in style cause a great deal of difficulty to a foreign manufacturer, and this difficulty increases in proportion to his distance from the market. Thus, the French firm can keep in touch with changes in style and demands for colors and supply its warehouses immediately with new colors or with increased quantities of colors whose demand warrants it. This firm carries over 380 colors of yarn, according to its sample card, and two or three times a month it offers a new shade to its agents and customers. This is the principal difficulty with which American exporters of yarn will have to contend.

A still further advantage held by foreign producers of handwork cottons in competing successfully in the European market is the matter of price. Probably because of lower labor costs of foreign manufacturers, crochet and embroidery cottons of grades which compare favorably with the American product are retailed abroad at practically the same price as American wholesale quotations. In some countries, silk embroidery flosses may be obtained for substantially the same money as similar American goods made of cotton. This, in conjunction with the fact that consumers of crochet and embroidery cottons are very conservative and skeptical as to the color fastness of new, untried yarns and reluctantly change from any accustomed brand, makes the stimulation of interest in American handwork cottons in Europe a difficult matter.

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FOREIGN PRODUCTION

Great Britain.—Scotland became at an early date the birthplace of the cotton-thread industry. In the first quarter of the eighteenth century there sprang up in Paisley and neighboring towns many small mills engaged in the twisting of linen thread by hand on twisting appliances imported from Holland. When the inventions of Arkwright and Crompton placed on the market the fine count cotton yarns from Lancashire, many of these mills began the production of cotton thread. The Clark firm had its beginnings in Paisley, manufacturing linen thread for heddles and loom harnesses. The curtailment of the imports of silk used for the loop or eye of the heddle, which occurred as a result of Napoleon's Berlin decree in 1806, was a circumstance which led the Clark firm to perfect a cotton-thread substitute for the former silk heddle yarn. The company branched out into the production of cotton sewing thread, which it placed on the market for the first time in 1812.

The Coats concern is the outgrowth of an interest which James Coats, a Canton-crêpe weaver of Paisley, held in a small thread mill supplying him with yarns of the special twist required in his business. James Coats expanded his interest in this line and established a thread mill at Ferguslie which became the nucleus of the present works located there. Both the Clark and Coats companies were aided in the establishment of their industries by the decline of the Paisley shawl industry which threw on the market a large amount of cheap labor. This was an important factor in the localization of the thread industry in and about Paisley.

In 1889 the firms of Clark and Coats formed a sales combination for the purpose of effecting economies in distribution. Headquarters for this selling organization, known as the Central Agency, were established at Glasgow. It also marketed the products of James Chadwick & Bro. (Ltd.), of Bolton, and later was intrusted with the distribution work of Jonas Brook & Bros. (Ltd.), of Meltham, and also that of the English Sewing Cotton Co. (Ltd.).[19] The primary function of this agency was the regulation of sales, collection of accounts, and maintenance of traveling salesmen with an apportionment of expense among constituent companies. This sales combination made the way clear for a consolidation in 1896 of the Clark and Coats companies, together with Jonas Brook & Bros. (Ltd.), and James Chadwick & Bro. (Ltd.). Each company continued to maintain its separate name, trade-marks, and organization, and profits were distributed among the shareholders of J. & P. Coats (Ltd.). In addition to the above-mentioned companies, J. & P. Coats (Ltd.), own the capital and control the operation of Kerr & Co. (Ltd.), and I. P. Clark & Co. (Ltd.).[20] The company also acquired a coal mine and a large block of the common stock of the Fine Cotton Spinners' and Doublers' Association, which facilitated their access to supplies of raw material.[21]

The balance sheet of J. & P. Coats (Ltd.), which is now largely a holding corporation, shows for the fiscal year 1926 a capital of

[19] Blair, Matthew, *The Paisley Thread Industry.*
[20] Great Britain Board of Trade Standing Committee on Trusts, Findings on Alleged Existence of a Combine Among Sewing Thread Manufacturers, Feb. 3, 1920.
[21] Macrosty, H. W., *The Trust Movement in British Industry.*

$98,546,625, reserves of $23,513,015, and total assets of $154,264,064. Of these, fixed assets total $80,258,883, consisting chiefly of shares in and permanent loans to subsidiaries. The company controls and largely finances by means of advances to them for stock and working expenses not only the companies mentioned above but also a number of subsidiary concerns and branch factories abroad. According to the 1926 balance sheet these companies owed J. & P. Coats (Ltd.), a sum of over $27,662,519, for advances and dividends receivable. In 1896, at the time of the amalgamation of the four concerns, the property of Coats comprised 16 factories, including mills in the United States, Canada, and Russia, and 60 branch houses. The company also maintained more than 150 depots in all parts of the world.[22] Information is not available concerning the subsidiaries, branch houses, and depots of the concern at the present time, but in the 30 subsequent years there has been without doubt a considerable expansion. The foreign branches of J. & P. Coats (Ltd.), at present established abroad, are located in the following countries: The United States, Germany, Belgium, Switzerland, Italy, Spain, Portugal, Russia, Poland, Austria, Hungary, Czechoslovakia, Mexico, Brazil, and Japan. The branch factory sells its product for the most part in the country in which it is located.

The English Sewing Cotton Co. (Ltd.), of Manchester, England, is the second British thread concern in importance. Primarily a holding corporation, it has a controlling interest in 17 enterprises,[23] the most important of which is, as already mentioned, the American Thread Co., of New York. In the original amalgamation were included 11 cotton sewing-thread manufacturers, a linen thread manufacturer, a silk throwster, and a silk thread producer. There were also obtained through this amalgamation a subsidiary in France and in Canada. The English Sewing Cotton Co. later acquired two other British concerns, including a subsidiary mill in Barcelona, Spain. The last-named was placed some years after under a management controlled by Coats; the French factory at Armentieres was subsequently destroyed during the war. In 1926 the capital of the English Sewing Cotton Co. amounted to $19,260,118 and its assets totaled $28,131,285.

In addition to these two outstanding producers, there are over 60 other manufacturers of sewing cotton in the United Kingdom. The production of the Coats company constitutes the greater part of the output of the entire country. In the investigation of the sewing-cotton subcommittee of the Standing Committee on Trusts in Great Britain in 1920 it was found that 80 per cent of the "domestic sewing cotton" sold by the Drapers' Chamber of Commerce in Great Britain was the Coats' product. Although the precise extent of the hold which Coats have of the British home trade can only be a matter of individual opinion, the findings of the committee show that the Coats concern for a number of years has been sufficiently strong to maintain an effective monopoly on sewing cotton for household use.

No figures for thread production in Great Britain are available.[24] In the absence of production figures the volume of export trade serves

[22] Macrosty, H. W., *The Trust Movement in British Industry*.
[23] *Statist*, July 21, 1923.
[24] Even during the investigation by the sewing-thread subcommittee of the Standing Committee on Trusts, the accountants of the British Government were denied access to the data on the operations and sales of the J. & P. Coats firm as a whole, on the ground that any such examination would disclose the company's foreign business and be detrimental to its interests.

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to indicate in a general way the position of Great Britain as a producer of sewing thread. As indicated by Table 8, which shows the exports of cotton sewing thread of Great Britain for 38 years, the quantity of shipments abroad attained the record average of 32,640,000 pounds annually during the 5-year period, 1899–1903. A decline in trade in the following decade brought exports down to 20,730,400 pounds in 1913. In 1916 exports rose to 24,701,800 pounds, the highest volume since 1909. The quantity of exports since the war has been considerably below the pre-war amount. During the five years, 1922–1926, the amount of exports was maintained at practically a stationary level, averaging about 18,000,000 pounds annually. Exports in 1925 represented a value of $36,754,000; in 1926, $34,986,983. As previously mentioned, the J. & P. Coats concern and the English Sewing Cotton Co. export over four-fifths of the goods[25] which they make in their British factories, the major part of their profits being derived from the trade in foreign and colonial markets.

TABLE 8.—*Cotton sewing thread—Exports of the United Kingdom, 1889–1926*

[Source: Great Britain Customs Establishment Statistical Office—Annual Statement of Trade]

Year	Pounds	Value	Year	Pounds	Value
1889	17,291,000	$13,103,543	1908	27,810,900	$21,132,737
1890	18,075,000	14,554,490	1909	29,724,300	23,003,084
1891	18,070,600	15,836,530	1910	24,397,800	20,404,378
1892	16,169,300	13,954,937	1911	23,032,200	19,360,991
1893	17,244,500	14,623,516	1912	22,556,900	19,028,151
1894	17,099,300	14,282,603	1913	20,730,400	16,831,574
1895	23,800,300	15,380,846	1914	19,210,800	16,184,188
1896	25,853,000	15,667,745	1915	20,899,300	16,018,346
1897	26,414,700	16,165,768	1916	24,701,800	22,676,680
1898	27,137,000	16,605,569	1917	22,331,400	26,496,552
1899	30,705,500	17,993,344	1918	17,057,700	31,253,556
1900	34,695,400	19,135,077	1919	19,026,200	41,337,941
1901	31,058,400	17,475,548	1920	22,188,300	52,593,083
1902	32,383,100	17,658,134	1921	15,028,400	32,593,743
1903	34,326,500	19,471,908	1922	17,561,500	34,465,605
1904	24,332,700	16,604,357	1923	17,932,700	33,287,432
1905	23,430,700	16,458,123	1924	18,095,800	30,763,844
1906	26,542,200	19,592,772	1925	18,365,500	36,753,537
1907	31,726,700	24,062,404	1926	19,048,104	34,986,983

The principal markets for British exports of cotton thread are British India, Argentina, Mexico, Australia, Brazil, and Sweden.

France.—France occupies a position of prominence in the manufacture of fine mending, embroidery, and crochet cottons for handwork. The products of Dollfus-Mieg et Cie., of Mulhouse, the pioneer in the handwork-cotton industry, have already been alluded to in the section on "domestic exports," page 27.

In addition to Dollfus-Mieg et Cie, there are two other internationally known French companies, (1) Cartier-Bresson, Société Anonyme, a century old concern, with factories at Pantin (Seine), Celles-sur-Plaine (Vosges), and Azerailles (Meurthe & Moselle), and (2) Maurice Frings et Cie, Manufacture Parisienne des Cotons L. V. & M. F. A., with establishments at Hellemmes, Lille, and Vitry-sur-Seine.

[25] The directors of the J. & P. Coats (Ltd.) stated to the sewing-cotton investigation committee that during the year ended June 30, 1919, 80.69 per cent of the profit arising from products manufactured in the United Kingdom was derived from sales in the foreign market; in 1914 the percentage was 83.86.

The production of sewing thread and handwork cottons in France is not officially recorded nor are export figures available, since French statistics do not separately enumerate either of these commodities.

Germany.—There are in Germany a number of independent thread concerns not connected with the German Sewing Thread Syndicate. Several of the independent companies are combined for the distribution of their products. The sales organization known as the Deutsche Naehfaden-Aktiengesellschaft, of Hamburg, which supplied exporters of textile goods engaged in trade with eastern and South American markets was involved in bankruptcy proceedings in October, 1925.[26]

Germany normally maintains a favorable export balance in cotton sewing thread. In 1913, German exports of cotton thread of all kinds, put up on wooden spools for the retail trade, amounted to approximately 3,066,000 pounds, valued at $1,268,000. Since the resumption of foreign commerce in 1920, German exports of sewing thread of cotton have been steadily advancing, and in 1923 fell just short of 1,000,000 pounds, the largest amount in the postwar period. In 1924, 1925, and 1926 they declined slightly in quantity from this record, but were, on the other hand, twice as large in value.

Even more important than the trade in sewing thread are the German exports of cotton thread in hanks, skeins, etc., which probably includes the handwork cottons. The 1913 pre-war exports of articles in this category amounted to nearly 5,895,000 pounds, valued at $5,831,000. The heaviest exports since the war occurred in 1923 when shipments totaled 1,590,178 pounds; in 1925, they amounted to 805,600 pounds, valued at about $1,067,000; and in 1926 to 854,000 pounds, valued at $1,161,600.

Other countries.—Austria, Belgium, and Italy are the only other countries of importance in the export trade in cotton thread and yarns for handwork. Shipments from Austria since the war have exceeded by a considerable margin the quantity exported by Austria and Hungary combined immediately prior thereto. In 1913, exports of the dual kingdom amounted to 1,625,011 pounds as compared with the postwar exports of Austria alone which aggregated 2,652,354 pounds in 1923, 2,572,547 pounds in 1924, 2,251,117 pounds in 1925, and 1,794,324 pounds in 1926. Belgian statistics under the caption "cotton yarn prepared for the retail trade" show in 1913 exports of 3,440,000 pounds, valued at $1,593,000. Postwar shipments have been smaller, aggregating 2,918,000 pounds in 1922, 2,664,000 pounds in 1924, and 2,245,000 pounds in 1925. In 1926, they fell off to 1,970,900 pounds, valued at $1,004,499.

The Italian export trade in sewing cotton put up in balls, skeins, or spools for retail trade was comparatively small prior to the war, approximating only 297,000 pounds in 1913. Postwar figures show a considerable expansion, the exports in 1921 exceeding 2,300,000 pounds, valued at $1,967,000. In recent years there has been a slight decline, although exports are still well above the pre-war level. The reverse is true of the trend of imports which have not regained their 1913 volume. Moreover, imports prior to the war were three times as great as exports; in the seven years, 1920–1926, average shipments abroad were more than double in quantity the imports into the country.

[26] *Daily News Record*, Oct. 28, 1925.

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Japan, which exported only about 316,000 pounds of cotton thread in 1913, entered foreign markets on a large scale when European deliveries were at a low ebb during the war. In 1920 Japanese shipments amounted to over 4,276,000 pounds. Although a drastic decline has occurred since that year as a result of the revived trade activities of the former leading exporting countries in cotton thread, the exports of Japan in 1925 totaled 637,400 pounds, or more than twice the volume for 1913. Exports declined still further in quantity in 1926, amounting to 592,866 pounds, valued at $346,800.

From Table 9, which arrays the chief thread-exporting countries according to rank, it may be seen that shipments from the United Kingdom greatly exceed the aggregate exports of all other countries combined. Belgium, Germany, Austria, Italy, and the United States follow in the order named, each exporting over a million pounds of thread and handwork cottons annually.

Table 10 shows the relative standing of the principal thread-purchasing countries, listed in serial order descending according to quantity of imports. The United States is not included in the table, as its statistics of such imports, recorded in yards, are not comparable with the poundage figures of other countries. Omitting the United States, the Far East is the most important market for sewing thread and cottons for handwork, British India taking first rank and China second. Canada and Sweden are the next largest importers. From the standpoint of value, the United States in most years ranks first and British India second as purchasers of thread and handwork cottons. In 1925 imports into the United States amounted to $3,463,960, as compared with imports into British India valued at $2,844,822; China, $1,763,400; Italy, $1,438,324; Canada, $1,319,930; Czechoslovakia, $1,264,650; and Sweden, $1,108,698.

TABLE 9.—*Cotton sewing thread and cotton yarns for retail trade—Exports of principal countries—Calendar years 1913, 1920–1926*

Country and commodity	1913	1920	1921	1922
	Pounds	*Pounds*	*Pounds*	*Pounds*
United Kingdom: Finished thread, cotton	20,730,400	22,188,300	15,028,400	17,561,500
Belgium: Cotton yarn for retail trade	3,440,349	2,063,351	2,329,074	2,918,099
Germany, total	8,960,817	285,055	602,297	2,053,805
Cotton thread of all kinds, twisted and made up for retail trade on spools	3,065,717	65,256	247,797	704,149
Cotton thread in skeins, etc.	5,895,100	219,799	354,500	1,349,656
Austria: Cotton yarn for retail trade	[1] 1,625,011	576,944	1,770,073	(2)
Italy: Sewing cotton in small skeins, in balls, on bobbins, and the like, or put up in any form for the retail trade	297,401	1,652,568	2,300,280	2,018,752
United States, total	(2)	(2)	(2)	1,944,640
Cotton sewing thread	(2)	(2)	(2)	1,653,184
Crochet, darning, and embroidery cottons	(2)	(2)	(2)	291,456
Czechoslovakia: Cotton yarns for retail trade	(2)	203,535	589,316	696,571
Switzerland: Cotton sewing thread for retail sale, on reels, in balls and skeins, etc.	828,489	837,968	491,626	542,993
Japan: Cotton thread	316,480	4,276,421	1,196,647	1,031,838
British India: Cotton sewing thread	----------	188,885	179,559	196,503

[1] Figures of Austria-Hungary.

[2] Not available.

TABLE 9.—*Cotton sewing thread and cotton yarns for retail trade—Exports of principal countries—Calendar years 1913, 1920–1926*—Continued

Country and commodity	1923	1924	1925	1926
	Pounds	*Pounds*	*Pounds*	*Pounds*
United Kingdom: Finished thread, cotton	17,932,700	18,095,800	18,355,500	19,048,104
Belgium: Cotton yarn for retail trade	2,817,047	2,663,953	2,245,116	1,970,901
Germany, total	2,584,012	1,930,127	1,730,170	1,804,465
Cotton thread of all kinds, twisted, and made up for retail trade on spools	993,834	909,177	924,609	950,403
Cotton thread in skeins, etc.	1,590,178	1,020,950	805,561	854,062
Austria: Cotton yarn for retail trade	2,652,354	2,572,548	2,251,117	1,794,324
Italy: Sewing cotton in small skeins, in balls, on bobbins, and the like, or put up in any form for the retail trade	1,523,599	1,264,118	1,628,979	1,751,114
United States, total	1,809,013	1,534,873	1,058,155	1,422,669
Cotton sewing thread	1,583,423	1,405,768	960,454	1,299,269
Crochet, darning, and embroidery cottons	225,590	129,105	97,701	123,400
Czechoslovakia: Cotton yarns for retail trade	424,399	524,915	736,998	811,293
Switzerland: Cotton sewing thread for retail sale, on reels, in balls and skeins, etc.	459,439	527,561	546,520	609,572
Japan: Cotton thread	730,527	821,264	637,409	592,866
British India: Cotton sewing thread	193,431	387,226	212,718	219,730

TABLE 10.—*Cotton sewing thread and cotton yarns for retail trade—Imports of principal foreign countries—Calendar years 1913, 1920–1926*

[In pounds unless otherwise stated]

Country and commodity	1913	1920	1921	1922
	Pounds	*Pounds*	*Pounds*	*Pounds*
British India: Cotton sewing thread	1,723,771	1,627,625	988,167	1,179,137
China:				
Cotton thread on spools (gross)	[1] 639,139	[1] 960,402	[1] 1,475,432	[1] 1,476,337
Crochet or embroidery cotton in skeins or balls	551,586	298,393	384,124	319,859
Canada, total	[2] 983,247	[2] 1,217,251	[2] 740,991	[2] 1,392,912
Cotton sewing thread in hanks	565,248	554,764	482,743	865,547
All other cotton thread n. o. p.	236,207	211,020	205,307	260,571
Crochet and knitting cotton	181,792	451,467	72,941	266,794
Sweden, total	926,887	928,161	542,784	756,623
Cotton sewing thread	690,977	712,968	401,526	558,648
Cotton yarn in skeins, balls, and the like adapted for retail trade	235,910	215,193	141,258	197,975
Belgium: Cotton yarn prepared for retail trade	693,353	634,826	608,168	766,484
Italy: Sewing cotton in small skeins, on bobbins, in balls, and the like, or put up in any way for retail trade	936,073	755,737	606,265	883,383
United Kingdom: Finished thread, cotton		321,816	436,189	678,983
Czechoslovakia: Cotton yarns for retail trade	[3]	471,987	500,563	512,170
Japan: Cotton twines and cotton threads	407,132	330,725	330,461	413,813
Hungary:				
Cotton thread for retail trade	[4]	[3]	[3]	[3]
Cotton knitting and embroidery yarn for retail trade	[4]	[3]	[3]	[3]
Switzerland: Cotton sewing thread, made up for retail trade (on reels, in balls, and skeins folded in flat layers, doubled yarn, English knitting yarn, etc.)	681,662	298,503	296,960	349,650
Germany: Cotton thread of all kinds, twisted, made up for retail trade	622,579	1,369,057	501,547	235,892
Austria: Cotton yarn for retail trade	2,028,012	303,573	382,057	[3]

[1] Quantity in gross of 12 dozens; poundage not given.
[2] Total here indicated is incomplete as cotton sewing thread on spools is omitted, such imports being recorded in value only. Imports of cotton sewing thread on spools were valued as follows: 1913, $374,647; 1920, $670,290; 1921, $318,945; 1922, $207,094; 1923, $187,953; 1924, $138,160; 1925, $79,882; 1926, $101,848.
[3] Not available.
[4] Included with Austria.

TABLE 10.—*Cotton sewing thread and cotton yarns for retail trade—Imports of principal foreign countries—Calendar years 1913, 1920–1926*—Continued

Country and commodity	1923	1924	1925	1926
	Pounds	*Pounds*	*Pounds*	*Pounds*
British India: Cotton sewing thread	1,374,011	1,709,140	1,979,027	2,134,497
China:				
Cotton thread on spools (gross)	[1] 1,212,705	[1] 1,216,106	[1] 1,115,646	[1] 1,224,091
Crochet or embroidery cotton in skeins or balls	291,726	253,727	215,995	301,059
Canada, total	[2] 1,474,853	[2] 1,125,441	[2] 991,520	[2] 1,065,740
Cotton sewing thread in hanks	1,008,910	757,105	731,079	736,023
All other cotton thread n. o. p.	322,945	212,602	179,723	210,549
Crochet and knitting cotton	142,998	155,734	80,718	119,168
Sweden, total	882,391	845,985	842,598	901,249
Cotton sewing thread	655,562	603,882	596,856	589,212
Cotton yarn in skeins, balls, and the like adapted for retail trade	226,829	242,103	245,742	[3] 312,037
Belgium: Cotton yarn prepared for retail trade	730,199	705,331	684,301	740,159
Italy: Sewing cotton in small skeins, on bobbins, in balls, and the like, or put up in any way for retail trade	686,292	763,012	787,042	684,308
United Kingdom: Finished thread, cotton	707,359	639,408	661,726	([4])
Czechoslovakia: Cotton yarns for retail trade	654,510	697,756	707,015	656,971
Japan: Cotton twines and cotton threads	405,094	443,725	345,050	414,176
Hungary, total		854,062	713,188	354,500
Cotton thread for retail trade	([3])	563,055	401,237	124,560
Cotton knitting and embroidery yarn for retail trade	([3])	291,007	311,951	229,940
Switzerland: Cotton sewing thread made up for retail trade (on reels, in balls, and skeins folded in flat layers, doubled yarn, English knitting yarn, etc.)	398,371	284,482	337,304	346,122
Germany: Cotton thread of all kinds, twisted, made up for retail trade	53,131	302,251	406,308	320,328
Austria: Cotton yarn for retail trade	204,146	183,643	195,328	201,941

[1] Quantity in gross of 12 dozens; pounds not given.
[2] See note 2, p. 33.
[3] Not available.
[4] Loop and fancy yarns included.

IMPORTS

Extent.—Table 11 is a chronological summary of the history of imports for consumption of cotton thread under the acts of 1890 and 1894 and of the inclusive imports of cotton thread and handwork cottons under the acts of 1897, 1909, 1913, and 1922 to the end of the calendar year 1926. There are also shown the revenue collected, the unit values, and the equivalent ad valorem rates of duty.

Under the act of 1890, imports for consumption of "spool thread of cotton" averaged annually 934,371,700 yards, valued at $97,212. Under the act of 1894, when the rate of duty was reduced from 7 cents to 5½ cents per 1,200 yards (12 spools of 100 yards each), imports of thread virtually doubled, averaging annually 1,826,671,000 yards, valued at $170,686.

In the next act, 1897, an eo nomine provision was made for the first time for crochet, darning, and embroidery cottons, mention being made in the same paragraph with cotton thread. Statistics of imports of such cottons for handwork had previously been lumped with cotton yarns. Under that act, however, and also under the two subsequent acts of 1909 and 1913, import figures for handwork cottons were combined with cotton sewing thread imports as inclusive totals. Not until after the passage of the act of 1922 were statistics segregated for each group.

The average annual imports for consumption of cotton thread and handwork cottons combined amounted to 1,576,586,400 yards, valued at $227,620, under the act of 1897; to 4,399,171,000 yards, valued at $1,137,865, under the act of 1909; to 6,696,722,200 yards,

valued at $2,391,429, under the act of 1913; and to 3,320,908,100 yards, valued at $2,942,443, under the act of 1922, to the end of the calendar year 1926.

TABLE 11.—*Cotton sewing thread and cottons for handwork*[1]*—Imports for consumption and revenue, 1891–1926*

Fiscal year (unless otherwise stated)	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	100 yds.				*Per cent*
1891 (Oct. 6, 1890, to June 30, 1891)	4,796,736	$55,454	$27,981	$0.012	50.46
1892	9,165,960	100,761	53,468	.011	53.06
1893	10,438,224	107,982	60,890	.010	56.39
1894	10,053,468	95,884	58,645	.010	61.16
1895 (July 1 to Aug. 27, 1894)	1,947,720	18,645	11,362	.010	60.94
Total (1,422 days, act of 1890)	36,402,098	378,726	212,346	.010	56.33
Annual average (act of 1890)	9,343,717	97,212	54,505	.010	56.33
1895 (Aug. 28, 1894, to June 30, 1895)	14,997,385	139,036	68,738	.009	49.44
1896	17,343,162	149,413	79,490	.009	53.20
1897	20,577,889	205,689	94,315	.010	45.85
1898 (July 1 to July 24, 1897)	230,184	2,487	1,055	.011	42.42
Total (1,062 days, act of 1894)	53,148,620	496,625	243,598	.009	49.05
Annual average (act of 1894)	18,266,710	170,686	83,722	.009	49.05
1898 (July 25, 1897, to June 30, 1898)	19,987,716	213,501	99,938	.011	46.81
1899	9,967,188	118,691	49,836	.012	41.99
1900	12,872,094	148,602	64,360	.012	43.31
1901	8,658,349	103,581	43,292	.012	41.89
1902	11,554,809	125,846	57,774	.011	45.91
1903	11,464,101	167,297	57,320	.015	34.26
1904	11,993,769	200,693	59,969	.017	29.88
1905	10,556,613	193,105	52,783	.018	27.33
1906	17,587,338	248,861	87,937	.014	35.34
1907	22,564,549	289,578	112,823	.013	38.96
1908	29,008,867	400,218	145,044	.014	36.24
1909	22,652,223	519,331	113,261	.023	21.81
1910 (July 1 to Aug. 5, 1909)	927,528	10,864	4,637	.012	42.68
Total (4,394 days, act of 1897)	189,795,084	2,740,168	948,974	.014	34.63
Annual average (act of 1897)	15,765,864	227,620	78,829	.014	34.63
1910 (Aug. 6, 1909, to June 30, 1910)	22,450,797	500,206	131,470	.022	26.28
1911	29,526,607	717,440	175,005	.024	24.39
1912	54,019,504	1,552,735	356,330	.029	22.95
1913	67,462,552	1,717,750	406,818	.026	23.68
1914 (July 1 to Oct. 3, 1913)	9,738,895	250,377	57,418	.026	22.93
Total (1,520 days, act of 1909)	183,198,355	4,738,508	1,127,041	.026	23.78
Annual average (act of 1909)	43,991,710	1,137,865	270,638	.026	23.78
1914 (Oct. 4, 1913, to June 30, 1914)	70,115,934	1,916,886	287,533	.027	15.00
1915	83,375,710	2,179,392	326,969	.026	15.00
1916	88,053,842	2,159,949	323,992	.025	15.00
1917	86,098,658	2,900,141	435,021	.034	15.00
1918	72,215,175	2,011,752	301,763	.028	15.00
1918 (July 1 to Dec. 31)	19,981,709	1,008,635	151,295	.050	15.00
1919 (calendar year)	46,474,969	1,851,957	277,794	.040	15.00
1920 (calendar year)	52,055,369	3,302,142	495,321	.063	15.00
1921 (calendar year)[2]	42,913,369	1,920,125	367,863	.045	16.03
1922 (Jan. 1 to Sept. 21)[3]	39,586,086	2,206,362	376,529	.056	17.07
Total (3,275 days, act of 1913)	600,870,281	21,457,341	3,284,020	.036	15.30
Annual average (act of 1913)	66,967,222	2,391,429	366,005	.036	15.30
1922 (Sept. 22 to Dec. 31)	12,114,158	536,017	111,803	.044	20.86
1923 (calendar year)	41,565,462	3,176,176	638,191	.076	20.08
1924 (calendar year)	36,533,670	3,036,175	616,859	.083	20.32
1925 (calendar year)	29,901,676	3,463,960	695,755	.116	20.09
1926 (calendar year)	22,001,762	2,379,716	477,544	.108	20.07

Imports shown under acts of 1890 and 1894 were listed as "spool thread of cotton." Imports recorded under acts of 1897, 1909, and 1913 include not only spool thread of cotton but also crochet, darning, and embroidery cottons. Imports under act of 1922 were listed as "cotton sewing thread, and crochet, darning, embroidery, and knitting cottons."

[1] Includes 1,765,531,500 yards (283,489 pounds) valued at $992,683, containing cotton of 1⅜ inches or longer paying, under the emergency tariff act, 7 cents a pound in addition to the regular duty of 15 per cent ad valorem; total duty $168,747, equivalent to 17 per cent ad valorem.

[2] Includes 3,910,265,700 yards (651,061 pounds), valued at $2,188,023, subject to emergency tariff act surtax of 7 cents a pound and paying total duty of $373,778, equivalent to 17.08 per cent ad valorem.

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In the acts of 1897, 1909, and 1922 the specific duty amounted to one-half of 1 cent per 100 yards; in the act of 1909 there was a proviso for a minimum rate of 20 per cent ad valorem; this was also retained in the act of 1922 which added, however, a maximum rate of 35 per cent ad valorem. In the act of 1913 the rate of duty was 15 per cent ad valorem. The rates of duty averaged 34.63 per cent ad valorem, or 0.50 cent per 100 yards, under the act of 1897; 23.78 per cent ad valorem, or 0.62 cent per 100 yards, under the act of 1909; 15.30 per cent ad valorem, or 0.55 cent per 100 yards, under the act of 1913; and 20.17 per cent ad valorem, or 1.79 cents per 100 yards, under the act of 1922, to the end of the calendar year 1926. (See Table 21, p. 56.) Of the four tariff acts mentioned it is seen that the act of 1897 carried the highest equivalent ad valorem rate of duty but the act of 1922 the highest equivalent specific duty in cents per 100 yards. The variations between the equivalent ad valorem and the equivalent specific rates are due to variations in the average unit prices and imports under the act of 1922 have been on an unusually high price level.

A consideration of the data presented in Table 11 for the inclusive imports of cotton thread and handwork cottons under the last four tariff acts will show that there are three distinct periods: (1) A period of about eight years, from the beginning of the act of 1897 to the end of the fiscal year 1905, in which imports were small and during most of the time practically stationary; (2) a period of 11 years, the fiscal years 1906 to 1916, inclusive, characterized by rising imports; and (3) a period of 10½ years, from the beginning of the fiscal year 1917 to the end of the calendar year 1926, of declining imports. It is significant that the period of rising imports and the period of declining imports did not begin with tariff acts but occurred at times when no change was contemplated in the existing rate of duty. This would tend to indicate that increases and decreases in the volume of imports of cotton thread and handwork cottons are due more largely to the law of supply and demand than to the tariff law, although changes in the rate of duties may accentuate the trend of imports. Imports under the first eight years of the act of 1897 appear to have been confined mainly to cotton thread and the rise that started in 1906 was apparently due to the inclusion of increasing amounts of handwork cottons. The start of the decline that has occurred since 1916 was probably an effect of war conditions, but its continuance has apparently been due to rising costs abroad and to the increased power of competition of the domestic manufacturers.

Tables 11a and 11b show the segregated statistics of imports of cotton thread and of handwork cottons under the act of 1922, the only period for which they are available. These statistics are given as recorded in Commerce and Navigation of the United States, but there is some doubt as to the correctness of the segregation of the two articles. These data show that imports of cotton sewing thread exceed imports of handwork cottons (crochet, darning, embroidery, and knitting cottons), but the reverse is claimed by importers and by the officials who examine imports. According to the New York examiner, imports of sewing thread are insignificant in quantity, consisting of only occasional shipments of specialties such as glazed thread and thread for mending gloves, etc., and the bulk of the imports under paragraph 902 of the tariff act of 1922 are handwork cottons.

This declaration was substantiated by analysis of the invoices at the customs house. Further confirmation was obtained from importers, and others conversant with the trade, who assert that imports of foreign sewing thread are negligible and that foreign handwork cottons are the only articles of any importance imported under paragraph 902. The 1926 figures, as shown in Tables 11a and 11b, show that imports of cotton thread averaged 10.3 cents per 100 yards and imports of handwork cottons 11.5 cents; the first-named price is apparently much too high for cotton sewing thread and this fact in itself tends to show erroneous segregation. The discrepancy between the recorded data and the facts as revealed by the invoices, the official examiners, and the trade, may arise from the lack of a clear line of demarcation between the words "thread" and "yarn" as used in the trade. Certain kinds of handwork cottons, such as the six-cord crochet and tatting cottons in the finer counts, closely resemble ordinary sewing thread in construction and are often referred to as crochet or lace threads. It is probable that these and other imports have been listed in import statistics as thread, with the result that amounts intended for sewing and the amounts intended for crocheting, darning, embroidering, and knitting, are not correctly differentiated in the records.

TABLE 11a.—*Cotton sewing thread* [1]*—Imports for consumption and revenue, 1922–1926*

Year	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	100 yards				*Per cent*
22 to Dec. 31)	8, 189, 450	$200, 121	$82, 824	$0.035	41.39
dar year)	34, 397, 013	2, 511, 025	800, 161	.073	31.87
lar year)	32, 082, 686	2, 081, 383	646, 300	.084	31.04
lar year)	25, 323, 147	2, 979, 168	808, 713	.118	27.10
lar year)	12, 353, 063	1, 272, 310	256, 084	.103	20.12

[1] Separately recorded prior to act of 1922. Imports here shown are included in Table 11.

TABLE 11b.—*Crochet, darning, embroidery, and knitting cottons* [1]*—Imports for consumption and revenue, 1922–1926*

Year	Quantity	Value	Duty collected	Value per unit	Equivalent ad valorem rate
	100 yards				*Per cent*
to Dec. 31)	3, 021, 108	$216, 806	$40, 179	$0.072	20.69
year)	7, 107, 840	995, 101	198, 000	.140	20.66
year)	4, 400, 084	353, 802	71, 400	.080	20.18
year)	4, 548, 920	484, 402	97, 045	.106	20.04
year)	9, 048, 030	1, 107, 400	221, 500	.122	20.00

[1] Separately recorded prior to act of 1922. Imports here shown are included in Table 11.

—Imports of cotton sewing thread and cottons for handwork recorded as to origin prior to 1918. In 1919, approximately t of the total quantity of imports came from Scotland and per cent from England. In the following year, France the American market, contributing more than 14 per cent

of the quantity and 20 per cent of the value of imports from all countries. The heaviest imports of French thread and handwork cottons occurred in 1923 when shipments aggregated 3,114,500,800 yards valued at $2,726,160, representing more than 73 per cent of the total volume and 85 per cent of the value. In quantity the quota supplied by France since 1923 has been declining both absolutely and relatively, amounting to 1,317,581,700 yards in 1926 or 60 per cent of the aggregate. This downward trend, on the other hand, has not been evidenced in the value of French shipments, which in 1925 reached the peak figure of $3,014,274 or nearly 87 per cent of the value of all thread imported. Coupled with the diminished quantity, this represents a striking increase in the unit value of the goods. Whereas the average unit value of French imports amounted in 1923 to $0.087 per hundred yards, this rose in 1924 to $0.105 and in 1925 to $0.142. Although the value of the imports from France fell in 1926 to $1,909,333, the average price per unit of 100 yards slightly increased to $0.144.

Table 12a shows the percentages of the total imports of cotton sewing thread and handwork cottons contributed by the five chief suppliers of the United States from July, 1918, to December 31, 1926. The figures on which these computations are based are presented in Table 12 which gives the general imports by quantity and value for this period.

In reading import statistics in Table 12, it should be borne in mind that merchandise landed in the United States may be immediately entered for consumption and the importer may take possession after payment of duty, or it may be stored in bonded warehouses. In the latter case the duty is not paid nor are the goods recorded as entered for consumption until such time as they may be withdrawn from the warehouse. Transit trade is not included in ordinary import and export records. Statistics of general imports record, by countries of origin, all merchandise other than that in transit which arrives in the United States, whether duty is paid at the time of arrival or deferred, while statistics of imports for consumption record only merchandise actually taken possession of by the importer. The merchandise recorded in the statistics of imports for consumption may have arrived during the year or a portion may have arrived in a previous year and have just been withdrawn from warehouse. For these reasons, imports for consumption and general imports do not coincide, for any particular year, in either quantity or value. The difference between the two in any one year is the measure of the variation in level of the stock of the commodity in bonded warehouses. In some years more is put into bonded warehouses than is withdrawn, thus causing imports for consumption to be less than general imports. An excess of imports for consumption usually indicates strong demand.

New York is the principal customs district for the entry of imports of sewing thread and handwork cottons; Porto Rico ranks second, and Chicago third.

TABLE 12.—*Cotton sewing thread and handwork cottons—General imports by countries, calendar years 1918–1926*

Imported from—	1918 [1]		1919		1920	
	100 yards	Value	100 yards	Value	100 yards	Value
nce	127,280	$4,113	1,000,582	$80,683	12,220,249	$730,398
etland	15,158,318	908,142	31,026,946	1,510,074	37,240,895	1,849,230
gland	4,125,627	100,597	5,472,689	191,746	15,539,875	496,462
rmany			13,073	425	139,152	6,069
itzerland			387,374	14,980	13,315,699	338,832
gium					458,892	29,754
n			4,320	80	52,560	1,141
ada	733,626	11,285	6,434,396	109,600	3,222,666	51,577
nd	130,620	1,908	587,045	24,274	447,243	27,363
erlands					644,461	11,310
ther countries	710	46	12,140	676	50,280	3,755
Total	20,276,181	1,026,091	44,938,565	1,932,538	83,331,972	3,545,891

Imported from—	1921		1922		1923	
	100 yards	Value	100 yards	Value	100 yards	Value
	14,329,549	$1,051,199	24,544,509	$2,160,303	31,145,008	$2,726,160
d	10,819,593	334,307	4,386,938	142,580	3,563,766	117,370
	5,623,178	192,495	7,895,621	178,391	4,678,102	133,049
y	2,345,319	147,929	2,801,564	159,749	2,317,214	182,239
nd	3,601,594	25,041	1,701,428	28,839	361,746	15,870
	124,694	1,215	195,909	23,595	60	7
	107,415	2,107	71,039	1,913	62,710	1,555
	8,598,264	198,759	9,858,400	47,956	65,599	1,640
vakia	214,645	16,493	2,396	261		
	195,615	9,903	324,628	7,642	106,241	10,001
ds					8,500	157
ountries	6,658	698	21,405	1,778	17,095	574
J	45,966,524	1,980,146	51,803,837	2,753,007	42,326,041	3,188,622

orted from—	1924		1925		1926	
	100 yards	Value	100 yards	Value	100 yards	Value
	24,846,875	$2,603,259	21,242,859	$3,014,276	13,175,817	$1,909,333
	5,669,768	182,046	[2] 6,286,536	247,784	[2] 5,154,751	177,067
	4,028,823	108,874				
	1,257,709	91,308	1,509,761	151,621	2,273,548	208,320
	586,697	35,449	610,509	48,307	825,869	56,270
			18,000	396	348,638	33,654
	259,516	3,735	111,360	1,830	60,178	1,896
	66,128	1,640	42,640	1,078	38,150	1,129
a			69,269	3,349		
tries	255,468	30,059				
	22,544	530	11,242	367	12,810	300
	36,993,528	3,056,900	29,902,175	3,469,008	21,889,761	2,387,969

[1] July 1 to Dec. 31.

[2] Figures for United Kingdom.

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TABLE 12a.—*Cotton sewing thread and handwork cottons—Proportion of total imports obtained from principal countries, 1918–1926*

Imported from—	1918 [1]		1919		1920	
	100 yards	Value	100 yards	Value	100 yards	Value
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
France	0.63	0.40	2.23	4.17	14.66	20.60
Scotland	74.76	88.51	69.04	78.14	44.69	52.15
England	20.35	9.80	12.18	9.92	18.65	14.00
Germany	----------	----------	.03	.02	.17	.17
Switzerland	----------	----------	.86	.78	15.98	9.56
All other	4.26	1.29	15.66	6.97	5.85	3.52
Total	100.00	100.00	100.00	100.00	100.00	100.00

Imported from—	1921		1922		1923	
	100 yards	Value	100 yards	Value	100 yards	Value
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
France	31.17	53.09	47.38	78.47	73.58	85.50
Scotland	23.54	16.88	8.47	5.18	8.42	3.68
England	12.23	9.72	15.24	6.48	11.05	4.17
Germany	5.10	7.47	5.41	5.80	5.48	5.71
Switzerland	7.84	1.26	3.28	1.05	.85	.50
All other	20.12	11.58	20.22	3.02	.62	.44
Total	100.00	100.00	100.00	100.00	100.00	100.00

Imported from—	1924		1925		1926	
	100 yards	Value	100 yards	Value	100 yards	Value
	Per cent	*Per cent*	*Per cent*	*Per cent*	*Per cent*	*Per cent*
France	67.17	85.16	71.04	86.89	60.19	79.96
Scotland	15.33	5.95	[2] 21.02	7.14	[2] 23.55	7.41
England	10.89	3.56				
Germany	3.40	2.99	5.05	4.37	10.39	8.72
Switzerland	1.58	1.16	2.04	1.39	3.77	2.36
All other	1.63	1.18	.85	.21	2.10	1.55
Total	100.00	100.00	100.00	100.00	100.00	100.00

[1] July 1 to Dec. 31.

[2] Figures for United Kingdom.

Type and quality.—The unit value of imports under paragraph 902 of the act of 1922 averaged $0.076 per hundred yards in 1923; $0.083 in 1924; $0.116 in 1925; and $0.108 in 1926. The high average unit value is, as previously stated, an indication that imports are mainly handwork cottons.

The most popular item imported is pearl cotton (coton perlé) in skeins and balls. (See p. 11.) Next in importance is the stranded cotton (coton mouliné) put up in short skeins of 8.7 yards. Third in popularity is the 6-cord cotton (cordonnet) in large and small balls. The "D. M. C." cottons of the Dollfus-Mieg Co., of Alsace, constitute the greater proportion of these imports. There are also considerable imports of high-grade mercerized mending cottons from other French concerns. In addition to the large imports of the items named above, there are occasional shipments from England of Turkey-red yarn in hanks, and small-lot imports of German couching floss. The relative importance of the import trade of the various types of hand-

work cottons is subject to change, as shifting styles cause fluctuations in demand.

An indication of the high price and inferentially of the high quality of imports is afforded not only by the average annual unit values above noted, but also by the fact that on over 82 per cent of the shipments coming in from abroad, the specific duty of one-half cent per hundred yards is inoperative. That is to say, in relation to the value of the goods, the specific rate is not equivalent to the minimum duty of 20 per cent ad valorem, provided for in paragraph 902. The great proportion dutiable at the minimum rate is significant of the predominance of high-valued goods in the import trade in this trade. This is discussed in further detail in the section on tariff considerations, page 59.

Relation of imports to domestic production.—No accurate comparison of imports with domestic production can be made because of the difference in classification and quantity units used in the statistics of the Census Bureau and of the Bureau of Foreign and Domestic Commerce. Import statistics are reported in yards, production statistics in pounds. Moreover, in the census reports, as noted on page 21, production statistics are available only for "thread," those for handwork cottons being combined with the figures for cotton yarns. Import statistics, however, reflect the classifications of the successive tariff acts which from 1897 to 1922 bracketed cotton sewing thread and cotton handwork yarns in one category. Since import statistics for handwork cottons have been segregated from sewing thread only since the passage of the act of 1922, it is not feasible to compare the value of imports with the value of production prior to the census of 1923. In that year, imports of cotton sewing thread were 4 per cent of the value of such thread produced in the United States; in 1925, approximately 5 per cent. The ratio of the quantity of sewing thread imported to that produced can only be roughly approximated by converting the production in 1923 to yards on the basis of 10,080 yards to the pound (representing a 36/3 cord thread, a reasonable average of the annual production). The result shows the volume of foreign shipments of sewing thread to this country to be only slightly more than 1 per cent of the American production in 1923, and to less than 1 per cent in 1925. At best, however, comparison of the relation of imports to production is unsatisfactory when on a value basis, since, as was pointed out in the preceding paragraphs, import statistics of sewing thread are unduly swelled by the addition of a large proportion of handwork cottons improperly classified as "thread." This limitation should be borne in mind, therefore, in interpreting Table 13.

Cotton sewing thread—Relation of imports to production, 1923 and 1925

	1923		1925	
	Quantity	Value	Quantity	Value
	100 yards		*100 yards*	
[illegible]	[1] 3,189,870,330	$55,311,320	[1] 3,788,605,094	$59,875,776
[illegible]tion	34,397,613	2,511,025	25,323,147	2,979,168
	Per cent	*Per cent*	*Per cent*	*Per cent*
[illegible]omestic production	1.08	4.54	0.67	4.98

[1] Equivalent; converted from pounds on basis of 10,080 yards to pound.

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Comparison of imports and exports.—Table 14 presents comparative statistics of imports and exports since 1918. Prior to July 1, 1918, the export trade was not recorded. Comparison can be made only on the basis of value as imports are compiled in yards and exports in pounds.

TABLE 14.—*Cotton sewing thread, and crochet, darning, and embroidery cottons—Comparison of value of imports and exports, 1919–1926*

Calendar year	Imports for consumption	Domestic exports	Excess of exports over imports[1]
1919	$1,851,957	$4,367,762	$2,515,805
1920	3,402,142	4,471,617	1,169,475
1921	1,920,125	2,055,328	135,203
1922	2,742,379	2,084,732	−707,647
1923	3,176,176	2,065,520	−1,110,656
1924	3,036,175	1,772,668	−1,263,507
1925	3,463,960	1,183,347	−2,280,613
1926	2,379,716	1,439,862	−939,854

[1] A minus sign indicates excess of imports over exports.

The high value of exports in 1919 and 1920 as compared with subsequent years was due in part to inflated prices but in larger part probably to the opportunity afforded domestic producers by the restriction of European exports during the war and the early postwar period. Following the recuperation of the industry abroad, the net balance of trade of the United States in sewing thread and handwork cottons has ceased to be in favor of exports. For the last five years imports have been the larger. The margin between imports and exports, which had been steadily rising since 1922, amounted to $2,280,613 in 1925, but declined in 1926 to $939,854.

PRICES

Trend of domestic prices of sewing thread, 1890–1926.—The domestic price of 6-cord sewing thread in 200-yard spools, at wholesale, was 3.2 cents per spool in 1890. It remained practically stationary at this point for a decade, undergoing but two slight reductions of a fraction of a mill per spool during the 10-year period. In 1900 the price was advanced to 3.7 cents per spool of 200 yards, at which it remained for nearly seven and one-half years. A rise to 4.5 cents occurred in June, 1907, followed by a decline in March and another in November, 1908, when the wholesale price dropped to 3.9 cents. It remained at this level until lowered to 3.6 cents in July, 1914, just before the outbreak of the World War. This price was in effect until July, 1916, when the upward movement began. Following an advance in November, 1916, to 3.8 cents, it rose in August, 1917, to 4.9 cents, at which it stood for over a year. After two price increases in the latter part of 1918, three upward changes in 1919, and monthly rises in the first quarter of 1920, the peak of 11.7 cents was reached in March, 1920. In the next month, April, there was a sharp decline to 9.3 cents. After two subsequent reductions, the price in August, 1921, reached 5.8 cents, which was in effect for nearly three years. In May, 1924, the price per 200 yards advanced to 6.8 cents and in the following month to 7.3 cents, at which level it has since remained. The monthly wholesale prices and the average for each year from 1890 are presented in Table 16, page 43.

Table 15 summarizes the annual average prices from 1890 to 1926, the relative price on the basis of the 1913 price, and presents for comparison the general index of prices in all commodity lines.

Average annual wholesale and relative prices of cotton thread, 6-cord spools, J. & P. Coats, compared with all-commodities index, 1890–1926

[Source: United States Bureau of Labor Statistics]

[1913 = 100]

	Average price per spool	Relative price	All-commodities index	Year	Average price per spool	Relative price	All-commodities index
--	$0.032	80.4	80.5	1909	$0.039	100.0	96.9
--	.031	79.6	80.0	1910	.039	100.0	100.9
--	.031	79.6	74.8	1911	.039	100.0	93.0
--	.031	79.6	76.6	1912	.039	100.0	99.1
--	.031	79.6	68.7	1913	.039	100.0	100.0
--	.031	79.6	70.0	1914	.038	95.7	98.1
--	.031	78.8	66.7	1915	.036	91.6	100.8
--	.031	77.8	66.8	1916	.037	93.6	126.8
--	.031	77.8	69.6	1917	.043	108.9	177.2
--	.031	77.8	74.9	1918	.051	130.4	194.3
--	.037	94.9	80.5	1919	.055	140.6	206.4
--	.037	94.9	79.3	1920	.098	249.5	226.2
--	.037	94.9	84.4	1921	.069	175.3	146.9
--	.037	94.9	85.5	1922	.058	148.7	148.8
--	.037	94.9	85.6	1923	.058	148.7	153.7
--	.037	94.9	86.2	1924	.068	172.4	149.7
--	.037	94.9	88.6	1925	.073	186.0	158.4
--	.042	106.6	93.5	1926	.073	186.0	151.1
--	.041	104.1	90.1				

. T.", also Clark's "Mile-End," same price.

Wholesale prices of cotton thread, 6-cord, 200-yard spools, J. & P. 90–1926 (price per spool, freight paid, on the 1st of each month)

[Source: United States Bureau of Labor Statistics]

1890	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	1901
.0318	$0.0312	$0.0312	$0.0312	$0.0312	$0.0312	$0.0312	$0.030	0.030	$0.030	$0.0372	$0.0372
.0318	.0312	.0312	.0312	.0312	.0312	.0312	.030	.0305	.0305	.0372	.0372
.0318	.0312	.0312	.0312	.0312	.0312	.0312	.030	.0305	.0305	.0372	.0372
.0318	.0312	.0312	.0312	.0312	.0312	.0312	.030	.0305	.0305	.0372	.0372
.0318	.0312	.0312	.0312	.0312	.0312	.0312	.030	.0305	.0305	.0373	.0372
.0318	.0312	.0312	.0312	.0312	.0312	.0312	.0305	.0305	.0305	.0372	.0372
.0312	.0312	.0312	.0312	.0312	.0312	.0305	.0305	.0305	.0305	.0372	.0372
.0312	.0312	.0312	.0312	.0312	.0312	.0305	.0305	.0305	.0305	.0372	.0372
.0312	.0312	.0312	.0312	.0312	.0312	.0305	.0305	.0305	.0305	.0372	.0372
.0312	.0312	.0312	.0312	.0312	.0312	.0305	.0305	.0305	.0305	.0372	.0372
.0312	.0312	.0312	.0312	.0312	.0312	.0305	.0305	.0305	.0305	.0372	.0372
.0315	.0312	.0312	.0312	.0312	.0312	.0309	.0305	.0305	.0305	.0372	.0372

1902	1903	1904	1905	1906	1907	1908	1909	1910	1911	1912	1913
.0372	$0.0372	$0.0372	$0.0372	$0.0372	$0.0372	$0.0451	$0.0392	$0.0392	$0.0392	$0.0392	$0.0392
.0372	.0372	.0372	.0372	.0372	.0372	.0451	.0392	.0392	.0392	.0392	.0392
.0372	.0372	.0372	.0372	.0372	.0372	.0402	.0392	.0392	.0392	.0392	.0392
.0372	.0372	.0372	.0372	.0372	.0372	.0402	.0392	.0392	.0392	.0392	.0392
.0372	.0372	.0372	.0372	.0372	.0372	.0402	.0392	.0392	.0392	.0392	.0392
.0372	.0372	.0372	.0372	.0372	.0451	.0402	.0392	.0392	.0392	.0392	.0392
.0372	.0372	.0372	.0372	.0372	.0451	.0402	.0392	.0392	.0392	.0392	.0392
.0372	.0372	.0372	.0372	.0372	.0451	.0402	.0392	.0392	.0392	.0392	.0392
.0372	.0372	.0372	.0372	.0372	.0451	.0402	.0392	.0392	.0392	.0392	.0392
.0372	.0372	.0372	.0372	.0372	.0451	.0392	.0392	.0392	.0392	.0392	.0392
.0372	.0372	.0372	.0372	.0372	.0451	.0392	.0392	.0392	.0392	.0392	.0392
.0372	.0372	.0372	.0372	.0372	.0418	.0408	.0392	.0392	.0392	.0392	.0392

1914	1915	1916	1917	1918	1919	1920	1921	1922	1923	1924	1925	1926
$0.0392	$0.0359	$0.0359	$0.039	$0.049	$0.057	$0.102	$0.077	$0.058	$0.058	$0.058	$0.073	$0.073
.0392	.0359	.0359	.039	.049	.056	.115	.076	.058	.058	.058	.073	.073
.0392	.0359	.0359	.039	.049	.052	.117	.076	.058	.058	.058	.073	.073
.0392	.0359	.0359	.039	.049	.052	.093	.076	.058	.058	.058	.073	.073
.0392	.0359	.0359	.039	.049	.052	.093	.076	.058	.058	.068	.073	.073
.0392	.0359	.0359	.039	.049	.052	.093	.076	.058	.058	.073	.073	.073
.0359	.0359	.0369	.039	.049	.052	.093	.076	.058	.058	.073	.073	.073
.0359	.0359	.0369	.049	.049	.052	.093	.058	.058	.058	.073	.073	.073
.0359	.0359	.0369	.049	.054	.052	.093	.058	.058	.058	.073	.073	.073
.0359	.0359	.0369	.049	.057	.052	.093	.058	.058	.058	.073	.073	.073
.0359	.0359	.0385	.049	.057	.052	.093	.058	.058	.058	.073	.073	.073
.0359	.0359	.0385	.049	.057	.076	.093	.058	.058	.058	.073	.073	.073
.0375	.0359	.0367	.043	.051	.055	.098	.069	.058	.058	.068	.073	.073

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The prices noted in the above tables are based throughout on the 200-yard spool, which was the standard form for household use until January 12, 1917. On that date occurred the first change in yardage. Black sewing thread was reduced to 150 yards and colored to 100 yards. The yardage of white thread, which at that time was unaffected, was later reduced to 150 yards on August 1 of the same year. On November 2, 1919, white and black threads in sizes 40 and finer were reduced to 100 yards per spool; in sizes below 40 the 150-yard put-up was retained. At this time a 250-yard dressmaker's size spool was introduced in this size range. The 150-yard length was replaced on the market for white and black thread in August, 1921. In the next change, which occurred on May 12, 1924, the entire line of sewing thread for household use, including white, black, and colors, was put up in 100-yard spools. The dressmaker's 250-yard spool was discontinued by one of the large companies but retained by the other.

The wholesale value of cotton sewing thread in 1925 and 1926 was 86 per cent higher than the pre-war level. At the peak of inflation sewing thread rose 149 per cent above the normal average of 1913. As indicated by the table, prices of sewing thread normally exceed the general average of wholesale prices on all commodity lines. From 1892 to 1913 they were steadily higher. During the war years, 1914–1919, however, the reverse was true. In 1920 and 1921 the relative price of sewing thread again exceeded the index number for wholesale prices. While it was about on a par with the general price level in 1922, and slightly less in 1923, it again rose in 1924, 1925, and 1926 to a point above the average of all commodities. Prices of sewing thread averaged higher in 1925 and 1926 than in any previous year except 1920.

It may be noted that in 1922 and 1923 prices of sewing thread were lower than in the three subsequent years in spite of the duty on raw cotton having a staple of 1⅜ inches or more in length, which was imposed by the emergency tariff act, effective from May 28, 1921, to September 21, 1922, inclusive. A considerable part of the raw cotton used in the sewing-thread industry is the long-staple Egyptian cotton dutiable under that act. The price of the finished sewing thread did not reflect at that time, nor in the following year, any increase in the cost of the raw material resulting from this tariff, as a depression then prevailed in the world market for long-staple Egyptian cotton which brought prices to a low level as compared with the three following years.

Prices of domestic sewing thread on spools for household use are uniform as to territory and uniform as to buyers, differing only with regard to discounts on the size of the order. The custom among manufacturers of household spool thread is to have one list price for wholesalers and jobbers, another for small retailers, and a third for the large retailers who contract for the minimum amount of 750 dozen spools on the "purchase order" plan. One of the trio of large manufacturers has also a series of discounts for purchase orders of 500 dozen and 250 dozen.

Prices of sewing thread to wholesalers and jobbers are not in alignment in the schedules of the two largest companies, the American Thread Co., and the Spool Cotton Co., which is the selling organization of J. & P. Coats, the Clark Thread Co., and the Clark

Spool Cotton Co. The Spool Cotton Co. maintains a
e level than does its chief competitor, the American
., a fact largely attributable to the prominence and tra-
stige of its brands in the field of household thread pro-
Moreover, it requires a shipment of at least 100 dozen
ivilege of freight prepayment. The American Thread
other hand, allows freight on shipments of 25 dozen or
prices of smaller and less well known manufacturers of
hread are in most instances lower than the quotations of
e above.

domestic and foreign handwork cottons.—As the chief
ler paragraph 902 of the act of 1922 are the crochet and
cottons for handwork, prices have been compiled for the
tant types of imports of the French D. M. C. cottons and
prices for competing domestic lines. These are pre-
ables 17, 18, and 19. It is evident from these tables that
f the products of the Dollfus-Mieg Co., of France, are
every instance than the comparable American-made
However, the French imports have, in general, a larger
ball or skein per number, indicating a finer grade of
, and for that reason would logically command higher
D. M. C. cottons, moreover, are made in a greater
olors, a wider assortment of sizes, and a more extensive
s in colors. The American-made products have usually
e price quotation for the entire range of sizes and colors,
D. M. C. cottons in certain types vary in price according
ss of the yarn size. Moreover, they have for the most
ies of prices—one for white and ecru, another for black
The retail price of the D. M. C. cottons, however, is
he entire size range in each type, the various wholesale
averaged to obtain a uniform selling price for retail

te the price differential between the foreign and domestic
ttons, specific comparison may be made of the two most
rpes in present demand. The wholesale landed price
C. article 117, a 6-strand mouliné put up in boxes of 24
yards each, in the United States, is 62 cents for white
79 cents for black and colors. Corresponding domestic
h run 9 yards to a skein are priced at 55 cents a box.
d article retails at 6 cents a skein, the domestic at 4
eins for 10 cents. In this connection it is interesting to
whereas the domestic cottons are widely sold by the
chain syndicates, the imported yarns are retailed only
class department stores and art needlework shops.
of domestic pearl cotton in skeins is 55 cents per box
ile that of the imported D. M. C. article 115 is 62
e and ecru and 77 cents in black and colors. The
ils at 8 cents a skein; the imported at 10 cents. The
kein of the latter, however, exceeds the length of put-up
ling numbers of the American products, size 8, for
he D. M. C. "perlé" cotton running 49.2 yards per
nestic only 40 yards.

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TABLE 17.—*Wholesale and retail prices, in the United States, in 1925, of typical imports of handwork cottons from Dollfus-Mieg et Cie, Mulhouse, France* [1]

Catalogue No.	Description	Put-up	Size [2]	Yards per skein or ball		Wholesale price per box		Retail price per skein or ball	Remarks
				White and colors	Black and ecru	White and ecru	Black and colors		
Article 115	Mercerized pearl cotton in skeins.	Box of 12 skeins	3	16.4		$0.62	$0.77	$0.10	Nos. 3, 5, 8, stocked in 220 colors and 14 special shades in size 5.
			5	27.3		.62	.77		
			8	49.2		.62	.77		
			12	76.5		.62	.77		
Article 116	Mercerized pearl cotton in medium balls.	Box of 10 balls of 10 grams (0.35 ounce) each.	5	53	49	.82	.97	.15	Made in 220 colors.
			8	95	89	.82	.97		
			12	141	125	.82	.97		
Article 116a	Mercerized pearl cotton in large balls.	Box of 10 balls of 50 grams (1.7 ounces) each.	3	144	131	4.00	4.76	----------	
			5	263	240	4.02	4.78	----------	
			8	488	422	4.05	4.81	----------	
Article 117	Mouline, 6-stranded cotton	Box of 24 skeins	25	8.7		.62	.79	.06	Made in 220 colors.
Article 151	Mercerized cordonnet (6-cord crochet).	Box of 10 balls of 20 grams (0.7 ounce) each.	3	91	81	1.79	2.13	.35	
			5	115	102	1.82	2.16		
			10	135	120	1.82	2.16		
			15	145	129	1.87	----------		
			20	192	171	1.87	2.21		
			30	231	206	1.97	2.31		
			40	273	243	2.04	----------		
			50	309	275	2.04	2.38		
			60	357	318	2.18	----------		
			70	393	350	2.18	2.52		
			80	437	389	2.18	----------		
			100	508	452	2.38	----------		
			150	636	566	2.67	----------		
Article 151B	do	Box of 10 balls of 10 grams (0.35 ounce) each.	30	118	105	1.05	1.22	.15	
			40	137	122	1.05	1.22		
			50	157	140	1.05	1.22		
			60	177	158	1.05	1.22		
			70	196	175	1.05	----------		
			80	216	193	1.05	----------		

[illegible]	[illegible]	[illegible] 19 containing 21.8 yards per skein.	.80	.95	.05	[illegible] stocked in 72 colors; 8, 12, 18, 30, 35, 40, 50, in 16 colors.
	[illegible]		.80	.95		
	[illegible]		.80	.95		
	[illegible]		.80	.95		
	[illegible]		.80	.95		
	[illegible]		.80	.95		
	[illegible]		.80	.95		
	[illegible]		.80	.95		
	[illegible]		.80	.95		
	[illegible]		.80	.95		
	[illegible]		.80	.95		
	[illegible]		.80	.95		

[illegible] Prices include transport expenses to clients' home freight house, custom's duties, and insurance charges.

TABLE 18.—*Wholesale and retail prices, in 1925, of domestic handwork cottons, J. & P. Coats' and Clarks' O. N. T. brands, competitive with D. M. C. cottons*

Catalogue No.[1]	Description	Article number of similar D. M. C. cotton	Put-up	Size	Yards per skein or ball		Wholesale price per box	Retail price per skein or ball
					White	Colored		
A } 15 B }	Pearl cotton in skeins	115	Box of 12 skeins	3	14		$0.55	$0.05
				[2] 5	24			
				8	40			
				12	70			
A } 19 B }	Pearl cotton in medium balls	116	Box of 12 balls [3]	3	40		1.00	.10
				5	60			
				8	100			
B 20	Pearl cotton in large balls	116a	Box of 10 balls	3	125		1.85	.30
				5	200			
				8	300			
A 4	Mercerized crochet	151	Box of 10 balls	1	37		1.25	.12
				3	75	60		
				5	110	100		
				10	110	100		
				15	120	100		
				20	150	125		
				25	150	125		
				30	175	150		
				40	175	150		
				50	200	175		
				60	225			
				70	250	225		
				80	300			
				100	300			
B 4	Mercerized crochet	[3] 151B	Box of 12 balls	3	75	50	1.00	[4] .13 [4] .15
				5	100	75		
				10	100	75		
				15	100	75		
				20	125	100		
				25	125	100		
				30	125	100		
				40	125	100		
				50	125	125		
				60	150			
				70	150	150		
				80	150			
				100	150			
A } 11 B }	Six strand	117	Box of 24 skeins		9		.55	.05

[1] Letter A denotes article manufactured by J. & P. Coats, letter B represents the Clark O. N. T. brand.
[2] Black and colors produced in size 5 only.
[3] The comparable D. M. C. article is put up 10 balls to a box.

[4] 2 for $0.25.
[5] White.
[6] Colored.

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TABLE 19.—*Wholesale and retail prices, in 1925, of handwork cottons of American Thread Co. competitive with D. M. C. cottons*

Catalogue No.	Description	Article number of similar D. M. C. cotton	Put-up	Size	Yards per skein or ball: White	Yards per skein or ball: Colors	Wholesale price per box	Retail price per skein or ball	Remarks
80	Silkine pearl cotton, 2-ply, mercerized.	115	Box 12 skeins	3	15		$0.55	$0.08	Black and 53 colors in size 5 only; 31 colors in size 3.
				5	25				
				8	40				
				12	70				
90	Silkine pearl cotton, 2-ply, mercerized.	116	Box of 12 balls	3	40		$1.00	$0.10	33 selected shades in sizes 3 and 5.
				5	60				
				8	100				
100	Silkine pearl cotton, 2-ply, mercerized.	116a	Box of 10 balls	3	125		$1.85	$0.25	30 selected shades in sizes 3 and 5.
				5	200				
				8	300				
50	Silkine art thread, 6 strands, mercerized.	117	Box of 24 skeins	25	9		$0.55	$0.04 (3 for $0.10)	145 selected shades.
30	Silkine crochet cotton, 6-cord, mercerized.	150 or 151	Box of 12 balls	3	60		$1.00	$0.10	14 solid colors in 5 sizes, viz, 5, 20, 30, 50, and 70.
				5	75	75			
				10	75				
				15	75				
				20	125	100			
				30	125	100			
				40	125				
				50	125	125			
				60	150				
				70	150	125			
				80	150				
				100	150				
10	Star crochet cotton, 6-cord, mercerized.	151	Box of 10 balls	3	75		$1.25	$0.13 (2 for $0.25)	13 selected colors in 5 sizes, viz., 5, 20, 30, 50, and 70.
				5	110	100			
				10	110				
				15	120				
				20	150	125			
				30	175	150			
				40	175				
				50	200	175			
				60	225				
				70	250	225			
				80	300				
				100	300				

[illegible]IVE CONDITIONS

[illegible] most important producer of cotton [illegible] purveyor of thread in the world's [illegible] source of imports into this country. [illegible] United States, however, is virtually [illegible] as the volume of incoming shipments [illegible] greatly surpassed in recent years by the [illegible] cottons for crocheting, mending, and [illegible] now constitute the bulk of the imports [illegible] of the tariff act of 1922.

[illegible] the domestic sewing-thread market has [illegible] international control of the world's thread [illegible] which have extensive branch holdings [illegible] well-defined export markets in those coun- [illegible] have not been established. The out- [illegible] & P. Coats, and its subsidiary, the Clark [illegible] have had affiliated branches in this country [illegible] while the English Sewing Cotton Co., the [illegible] Britain, has maintained interests here for [illegible] century. The production of household sewing [illegible] cottons by the three companies of the United [illegible] owned stock amounts, it is estimated, to about [illegible] domestic output. The dominant position [illegible] in the field of household spool-thread produc- [illegible] factor accounting for the comparatively small [illegible] thread exported to the United States by the two [illegible] concerns in England and Scotland.

[illegible] of crochet and embroidery cottons for hand- [illegible] eminence has been held by France for generations. [illegible] advantage of the two French companies, Dollfus- [illegible] Cartier-Bresson Société Anonyme, particularly the [illegible] result of over a century of skill in the manufacture of [illegible] yarns for needlework craft and their efficiency in the [illegible] distribution of their goods.

[illegible] French handwork cottons are essentially a quality [illegible] before the war they surpassed the American-made articles [illegible] silklike finish, the extent of color range, fastness of [illegible] of yarn count. The American market had been so [illegible] dominated by the French imports that it was extremely [illegible] handwork cottons of domestic manufacture to displace [illegible] the esteem of customers. When imports from France were [illegible] during the war, it became clearly manifest that domestic [illegible] were extending their output and successfully bidding for [illegible] patronage. A few concerns lost the trade when imports [illegible] from their former source after the end of the war. [illegible] the manufacturers who had obtained a firm hold on the [illegible] during the absence of French competition have continued [illegible] in a strong position owing to the greatly improved quality of [illegible]

[illegible] present-day volume of sales of domestic-made handwork [illegible] greatly exceeds the pre-war turnover. Coincident with the [illegible] advance in quantity, there has been a noteworthy progress [illegible] the betterment of the quality of the product. The utilization of [illegible]

e extensive range of dyes and higher types of cotton
rcerizing properties has enhanced the relative competi-
the majority of the American mills until now their
es favorably with the imported French goods. More-
usness of import deliveries has given the American
considerable advantage, because of the proximity of
l their readiness to fill orders with dispatch. Further-
of the French handwork cottons is generally higher
mestic articles of similar type. This, however, does
have an adverse effect on the consumption of the
by that element of the public which prefers such yarns.
growing ability of American producers of handwork
pete with the French, it is probable that the latter
lead in certain lines of handwork cottons made of
yarns which are not produced on a commercial scale

TARIFF CONSIDERATIONS

iff legislation.—Cotton sewing thread was included
rn in the tariff act of March 2, 1861, under the
'spool and other thread of cotton", with a duty of 30
lorem. This was raised in 1862 to 40 per cent ad
64 cotton sewing thread received separate recogni-
t time, the rate then levied being 6 cents per dozen
rds each, or fraction thereof, and in addition thereto
valorem. The tariff act of the following year, 1865,
ne specific duty, but made the ad valorem part of
uty 30 per cent on spools of not over 100 yards and
pools of more than 100 yards. These rates, which
ged in the tariff of 1870, were reduced by 10 per
l restored in 1875 to the level of the tariffs of 1865

83 substituted for the compound duty a straight
cents per dozen spools for each 100 yards or fraction
te was carried over in 1890 but subsequently reduced
er the act of 1894.
ing, and embroidery cottons were added to the
pool thread in the act of 1897. Their exclusion
aragraph was due in part to the fact that their
itrary and not in strict accord with the system of
for yarns for textile manufacturing. They are
small balls or skeins in a large number of varieties
er trade-marked brands and names rather than by
yarn of which they are made. Hence, any attempt
arn number for the purpose of levying tariff duties
nts, as on ordinary cotton yarns, would entail great
ficulties which are avoided by the flat specific rate.
the duty on both cotton sewing thread and crochet,
broidery cottons was again raised to 6 cents per
eels of 100 yards or fraction thereof. The para-
rther for thread and handwork cottons otherwise

than on spools or reels; for such it levied a duty of one-half of 1 cent for each 100 yards or fraction thereof.[27]

It was prohibited for the first time in the act of 1897 to assess the duty upon a fewer number of yards than that marked on the spools or reels. This proviso was framed to induce agreement between the actual contents of the spools, reels, balls, etc., and the quantity indicated thereon. Overstatement of quantity by the manufacturer would thus become unprofitable to the producer, since he would be obliged to pay the duty on the number of yards indicated on the container and would, therefore, derive no advantage from exaggerating the yardage unless the value of the thread not delivered was equal to the duty on the same shortage of yards.

In 1909 the specific rates of the preceding act on sewing thread, crochet, darning, and embroidery cottons were maintained, a proviso being added that the rate should in no case be less than 20 per cent ad valorem. No limit was specified as to the length of the thread and yarns contained on the spools, reels, or balls. However, if the thread or yarn entered in the form of skeins, cones, or tubes, the maximum length was restricted to 600 yards. If the yardage exceeded this figure, the threads and handwork cottons were to be assessed as yarns under the cotton-yarn paragraph in the law. The purpose of this length limitation was to clarify the ambiguity of wording in the tariff act of 1897. Although it was the evident intention of Congress to include only yarns for hand use, litigation resulted over the scope and meaning of the term "embroidery cotton" in that act. Under the decision of the United States Circuit Court of Appeals, second circuit, 1906, it was ruled that "embroidery cotton" was a well-known commercial term in the trade which referred then only to that which was used in hand embroidery and put up in short skeins. It was held, therefore, that yarn put up on paper bobbins for use on embroidery machines did not come within the class of embroidery cottons.[28] (*Loeb* v. *United States*, 150 Fed. 327.) The Board of General Appraisers in G. A. 6730, T. D. 28803, followed this ruling and held that embroidery cotton imported in large skeins containing 15,000 to 21,000 yards, though identical to that put up in small skeins and boxed, was not dutiable as embroidery cotton but as cotton yarn. In the framing of the act of 1909 cognizance was taken, therefore, of the legal decisions which interpreted the 1897 provision as applying solely to yarns for handwork. The insertion of the length limitation thus made any other interpretation impossible.

A flat 15 per cent ad valorem duty was substituted in the act of 1913 for the specific rates, on spool cotton and crochet, darning, and embroidery cottons, irrespective of finish, count, method of manufacture, and put-up. This act omitted specifying a maximum yardage for yarns coming in under the paragraph. As a result of the deletion of this clause, the paragraph was again involved in litigation. The United States Court of Customs Appeals in 7 Ct. Cust. Appls. 414, held that the term "embroidery cottons" in the paragraph in

[27] In the opinion of the Board of Appraisers (G. A. 4061, T. D. 18748), the language "otherwise than on spools or reels" might fairly be rendered "thread in bulk." It decided that the expression "one-half of 1 cent for each 100 yards or fractional part thereof" meant that the aggregate number of yards in the invoice must be ascertained and not that if each skein contains less than 100 yards it must be taxed as if contained 100 yards at one-half cent per skein, the words "fractional part thereof" referring to the fractional part of 100 in the total number of yards.

[28] The Treasury Department construed and applied the law in accordance with the Loeb case up to 191

oidery cottons, irrespective of whether intended for hand
. This decision was based on the hypothesis that Con-
ting embroidery machines free under the act of 1909
; ready-made embroidered articles to a high duty,
courage the domestic embroidery industry both hand
Hence, it was believed that it was the congressional
or one of the necessary materials for the infant in-
embroidery cottons," with a comparatively low rate
void setting at naught what was thus interpreted to
f Congress, embroidery cottons for machine use were
it of the statute by the courts and were held entitled
levied on special handwork cottons.

liminate the discriminatory classification of one type
is favored merely on the basis of intended use and not
essential particular from ordinary yarns for knitting,
ng, and other textile manufacture, the length limita-
d in the act of 1922. While the act of 1909 limited
0 yards, the 1922 act put the point of delimitation at
he ground that the latter more nearly represents the
m length of cottons sold for the retail trade. This
the purview of the paragraph only yarns intended
ince yarns for machine work are as a rule of greater
re economy in production. As a final precaution a
for handwork" was added to definitely establish the
f yarns for machine embroidery under the paragraph
ine yarns.

922 the term "cotton sewing thread" was substituted
'spool thread of cotton," owing to the anomalous
r appellation for sewing thread not on spools nor
ls. The term "spool thread" had been in continuous
ince 1861. Imports at that time were for the most
out as the industry progressed thread was put up
n skeins and in the form of tubes, cones, and large
for consumption by manufacturers. Since the
rued "spool cotton" to include also unfinished and
d in skeins, which was intended for use as sewing
completed was suitable for such (T. D. 37793–G. A.
eld illogical to continue a term that had become
he elimination of the word "spool" it was also
ention the form of put-up, since sewing thread is
ardless of the manner of winding or the form of the
s wound.

ochet, darning, and embroidery cottons was added
otton which logically belongs to the group of hand-
th similarity and use. Sewing thread and cottons
er the act of 1922 were subjected to the same rate
amely, one-half cent per 100 yards. A provision
ig a minimum duty of 20 per cent and a maximum
t ad valorem.

he last six tariff acts.—Table 20 shows the total
mption of cotton sewing thread and cottons for

609–T. D. 17435, G. A. 4674–T. D. 22080, T. D. 30184–G. A. 6952.

handwork and the duty collected thereon for each inclusive period covered by the last six tariff acts. For comparative purposes, these data are reduced to a uniform basis of 365 days in Table 21, which also gives the average annual unit value and the average specific and ad valorem rates of duty under each act.

TABLE 20.—*Total imports for consumption of cotton sewing thread and cottons for handwork* [1] *under each of the last six tariff acts*

Act of—	Inclusive period	Number of days	Total quantity imported	Total value	Total duty collected
			100 yards		
1890	Oct. 6, 1890, to Aug. 27, 1894	1,422	36,402,098	$378,726	$213,346
1894	Aug. 28, 1894, to July 24, 1897	1,062	53,148,620	496,626	243,598
1897	July 25, 1897, to Aug. 5, 1909	4,394	189,795,084	2,740,168	948,974
1909	Aug. 6, 1909, to Oct. 3, 1913	1,520	183,198,355	4,738,508	1,127,041
1913	Oct. 4, 1913, to Sept. 21, 1922	3,275	600,870,281	21,457,341	3,284,020
1922	Sept. 22, 1922, to Dec. 31, 1926	1,562	142,116,668	12,592,044	2,540,152

[1] Crochet, darning, and embroidery cottons included only since July 24, 1897.

TABLE 21.—*Annual average quantity and value of imports of thread and handwork cottons and duty collected under last six tariff acts* [1]

Act of—	Annual average			Average value per 100 yards	Equivalent ad valorem rate	Equivalent specific rate per 100 yards
	Quantity	Value	Duty			
	100 yards				*Per cent*	*Cents*
1890	9,343,717	$97,212	$54,505	$0.010	56.33	0.58
1894	18,266,710	170,686	83,722	.009	49.05	.46
1897	15,765,864	227,620	78,829	.014	34.63	.50
1909	43,991,710	1,137,865	270,638	.026	23.78	.62
1913	66,967,222	2,391,429	366,005	.036	15.30	.55
1922 [2]	33,209,081	2,942,443	598,569	.089	20.17	1.79

[1] The yearly figures from which these two tables are calculated are shown in Table 11 on p. 35.
[2] To Dec. 31, 1926.

As previously noted, the difference in tariff wording and the legal interpretation thereof have caused differences in the composition of the imports recorded for the various acts in Tables 20 and 21. Imports shown for the acts of 1890 and 1894 relate to cotton sewing thread exclusively, whereas those under subsequent acts embrace cotton sewing thread and handwork cottons. The imports shown for the act of 1913, moreover, include also embroidery yarns for machine work. The volume of such yarns imported during this period and lumped with handwork cottons in the statistical records can not be determined, but it was undoubtedly large, because the domestic machine embroidery industry was then in the early stages of its development and dependent to a more or less degree upon foreign sources of supply.

It may be observed from Table 21 that in value the average annual imports were lowest under the act of 1890 and have increased under each successive act up to and including that of 1922. This steady rise in value has been due in large part to the upward trend of the average unit value per 100 yards. In quantity, on the other hand, the average annual imports show fluctuating tendencies, alternately expanding and declining under the acts of 1894 and 1897, successively

under the next two acts, 1909 and 1913, and decreasing
ıg the period of the present tariff act. It is important to
hat a part of the record growth of the trade in thread and
cottons indicated by the import statistics for the act of
to a certain extent fictitious, inasmuch as the inclusion
; act of embroidery yarns for machine work was a strong
welling the quantity of the average annual imports. Their
ınder the act of 1922, on the other hand, was a factor in the
ecorded for the subsequent period. Such differences in the
on of the imports tend to obscure somewhat the results of
in the rates of duty upon the volume of trade.

idering the effect of tariff changes on quantity of imports,
be noted that the equivalent ad valorem rate of duty,
s 56.33 per cent under the act of 1890, was successively
er the acts of 1894, 1897, 1909, and 1913. Because of rising
es, however, there was no marked change in the equivalent
uty which was under each of these five tariff acts not far
-half of 1 cent per 100 yards. Under the act of 1922, an
ented situation has arisen. Although the equivalent ad
rate of duty is lower than that under any of these acts
13, the unusually high unit value has resulted in an equiva-
ific duty, in cents per hundred yards, which is more than
es that of the average under the five preceding acts.

ecrease in the rate of duty in the act of 1913 apparently
o prolong the cycle of rising imports which began in 1906
e rates of the act of 1897. Likewise, the increase in the
ties on cotton thread and handwork cottons in the act of
ningly stimulated the trend toward a decline in imports that
ed in 1917 under the 1913 rates. As neither of the years
itiated the periods of rising and falling imports were coinci-
h any tariff change, it would appear that the volume of
has been influenced in the long run more by supply and
than by the rate of duty.

tion of the act of 1922.—The tariff act of 1922, like that of
ıposed on cotton sewing thread and on handwork cottons a
duty of one-half of 1 cent per 100 yards, and provided that
the foregoing should pay less than 20 per cent ad valorem.
ariff act of 1922 it was also provided that none of the foregoing
pay more than 35 per cent ad valorem.

ıe basis of unit values per 100 yards, the rates of duty on cotton
thread and handwork cottons in paragraph 902 of the act of
ay therefore be divided into three classes, as follows:

Imports valued at—	Dutiable at—
n 1¾ cents per 100 yards	35 per cent ad valorem.
to 2½ cents per 100 yards	½ cent per 100 yards.
an 2½ cents per 100 yards	20 per cent ad valorem.

seen that the specific duty of half a cent per 100 yards is
e only on imports valued at 1¾ cents to 2½ cents per 100
At the level of prices that have prevailed under the act of
ıt least to the end of the calendar year 1926, the specific rate
ly inoperative, and the great bulk of the imports, being valued
e than 2½ cents per 100 yards, have been dutiable under the
um rate of 20 per cent ad valorem. Table 22 shows the ratio
imports in each value class to the total imports under paragraph
the act of 1922 to the end of the calendar year 1926.

TABLE 22.—*Cotton sewing thread and handwork cottons—Proportions of total imports assessed at the specific, the minimum ad valorem, and the maximum ad valorem rates of duty provided in the act of 1922*

Calendar year	Entered under specific rate of one-half cent per 100 yards		Entered under minimum ad valorem rate of 20 per cent		Entered under maximum ad valorem rate of 35 per cent	
	Per cent of total quantity	Per cent of total value	Per cent of total quantity	Per cent of total value	Per cent of total quantity	Per cent of total value
1922 [1]	25.14	11.26	69.18	86.95	5.68	1.79
1923	7.02	1.89	92.54	98.04	.44	.07
1924	28.85	7.30	69.49	92.43	1.66	.27
1925	12.07	2.19	87.73	97.79	.20	.02
1926	14.83	3.10	85.04	96.88	.13	.02
Total [2]	16.45	3.90	82.45	95.93	1.10	.17

[1] From Sept. 22 to Dec. 31, 1922, under act of 1922.
[2] For total period of 1,562 days, from Sept. 22, 1922, to Dec. 31, 1926, inclusive, under act of 1922.

Table 23, which is the total of Tables 23a and 23b, shows the actual quantities and values on which the percentages in Table 22 are based.

TABLE 23.—*Total cotton sewing thread and handwork cottons—Imports for consumption under act of 1922, classified according to rates of duty*

Calendar year	Entered under specific rate of one-half cent per 100 yards		Entered under minimum ad valorem rate of 20 per cent		Entered under maximum ad valorem rate of 35 per cent		Total	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
	100 yards		*100 yards*		*100 yards*		*100 yards*	
1922 [1]	3,044,730	$60,338	8,380,879	$466,053	688,549	$9,626	12,114,158	$536,017
1923	2,916,879	59,928	38,463,457	3,113,869	185,126	2,379	41,565,462	3,176,176
1924	10,538,555	221,539	25,388,556	2,806,379	606,559	8,257	36,533,670	3,036,175
1925	3,609,840	75,996	26,233,103	3,387,214	58,733	750	29,901,676	3,463,960
1926	3,262,101	73,821	18,710,203	2,305,533	29,398	362	22,001,702	2,379,716
Total	23,372,105	491,622	117,176,198	12,079,048	1,568,365	21,374	142,116,668	12,592,044

[1] From Sept. 22 to Dec. 31, 1922, inclusive.

TABLE 23a.—*Cotton sewing thread—Imports for consumption under act of 1922 classified according to rates of duty* [1]

Calendar year	Entered under specific rate of one-half cent per 100 yards		Entered under minimum ad valorem rate of 20 per cent		Entered under maximum ad valorem rate of 35 per cent		Total	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
	100 yards		*100 yards*		*100 yards*		*100 yards*	
1922 [2]	3,044,730	$60,338	4,456,171	$220,157	688,549	$9,626	8,189,450	$290,121
1923	2,916,879	59,928	31,295,608	2,448,718	185,126	2,379	34,397,613	2,511,025
1924	9,927,230	208,724	21,554,141	2,464,445	601,315	8,184	32,082,686	2,681,353
1925	3,604,665	75,881	21,701,774	2,903,073	16,708	214	25,323,147	2,979,168
1926	3,133,013	70,955	9,205,436	1,201,171	15,214	184	12,353,663	1,272,310
Total	22,626,517	475,826	88,213,130	9,237,564	1,506,912	20,587	112,346,559	9,733,977

[1] Imports here shown are included in Table 23. [2] From Sept. 22 to Dec. 31, 1922, inclusive.

-Handwork cottons—Imports for consumption under act of 1922, classified according to rates of duty [1]

red under specific rate of one-half cent per 100 ds		Entered under minimum ad valorem rate of 20 per cent		Entered under maximum ad valorem rate of 35 per cent		Total	
tity	Value	Quantity	Value	Quantity	Value	Quantity	Value
ards		*100 yards*		*100 yards*		*100 yards*	
		3, 924, 708	$245, 896			3, 924, 708	$245, 896
		7, 167, 849	665, 151			7, 167, 849	665, 151
325	$12, 815	3, 834, 415	341, 934	5, 244	$73	4, 450, 984	354, 822
175	115	4, 531, 329	484, 141	42, 025	536	4, 578, 529	484, 792
088	2, 866	9, 504, 767	1, 104, 362	14, 184	178	9, 648, 039	1, 107, 406
588	15, 796	28, 963, 068	2, 841, 484	61, 453	787	29, 770, 109	2, 858, 067

shown are included in Table 23. [1] From Sept. 22 to Dec. 31, 1922, inclusive.

hows that of the total cotton sewing thread and hand- imported under the act of 1922 from September 22, ember 31, 1926, no less than 82.45 per cent in quantity r cent in value were entered under the minimum ad of 20 per cent.

specific rate, as well as the maximum ad valorem rate, to low-priced shipments, the heavy concentration of r the minimum ad valorem proviso indicates that the ds are of a high unit value.

inserted to show the average values, per unit of 100 cotton sewing thread and handwork cottons imported of 1922 to the end of the calendar year 1926. It may from this table that imports in 1926 averaged $0.108 , the highest value recorded with the exception of 1925. nit value of goods imported during the four years, 1923– wn a considerable increase, even exceeding the inflated 0. This recent trend toward higher values per unit herefore, reflects a well-defined change in the type of d.

ton sewing thread and handwork cottons—Average unit values' 00 yards, of imports for consumption under act of 1922

cation	Average unit value per 100 yards of imports in—					
	1922 [1]	1923	1924	1925	1926	Total period [2]
entered under—	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*	*Cents*
rem rate	1. 98	2. 05	2. 10	2. 11	2. 26	2. 10
rem rate	4. 94	7. 82	11. 43	13. 38	13. 05	10. 47
	1. 40	1. 29	1. 36	1. 28	1. 21	1. 37
	3. 54	7. 30	8. 36	11. 76	10. 30	8. 66
ered under—						
			2. 10	2. 22	2. 22	2. 12
rem rate	6. 27	9. 28	8. 92	10. 68	11. 62	9. 81
rem rate			1. 39	1. 28	1. 25	1. 28
	6. 27	9. 28	7. 97	10. 59	11. 48	9. 60
dwork cottons en-						
	1. 98	2. 05	2. 10	2. 11	2. 26	2. 10
em rate	5. 56	8. 10	11. 05	12. 91	12. 32	10. 31
em rate	1. 40	1. 29	1. 36	1. 28	1. 23	1. 36
	4. 42	7. 64	8. 31	11. 58	10. 82	8. 86

1922, inclusive. [2] Total period from Sept. 22, 1922, to Dec. 31, 1926, inclusive.

The foregoing table shows that imports of cotton sewing thread and handwork cottons under the act of 1922, to the end of the calendar year 1926, averaged 8.86 cents per 100 yards. The ineffectiveness of the specific rate of one-half cent per 100 yards is shown by the fact that without the minimum and maximum ad valorem rates the specific rate would have been equivalent to 0.5 divided by 8.86, or only 5.64 per cent ad valorem.

Comparison of duties on cotton sewing thread and on cotton yarn.—For the purpose of comparing the duties levied on cotton sewing thread with the duties levied on the yarn of which the thread is made, Table 24 has been compiled, giving the tariff rates on representative numbers of 6-cord spool cotton and on the yarns used in their manufacture.

TABLE 25.—*Comparison of tariff rates on 6-cord cotton sewing thread and on yarn used in its manufacture*

Thread ticket No.	6-cord thread			Combed cotton yarn used in 6-cord thread		
	Number of yards to the pound	Specific duty per pound	Minimum ad valorem rate	Yarn No.	Specific duty per pound	Minimum ad valorem rate
		Cents	*Per cent*		*Cents*	*Per cent*
16	4,480	22.4	20.00	32	8.00	18.00
20	5,600	28.0	20.00	40	10.00	20.00
24	6,720	33.6	20.00	48	12.40	22.00
30	8,400	42.0	20.00	60	16.00	25.00
36	10,080	50.4	20.00	72	19.00	28.00
40	11,200	56.0	20.00	80	22.00	30.00
50	14,000	70.0	20.00	100	28.00	30.00
60	15,400	77.0	20.00	110	31.00	30.00
70	16,800	84.0	20.00	120	34.00	30.00
80	18,200	91.0	20.00	130	34.00	30.00
90	21,000	105.0	20.00	150	34.00	30.00

A 6-cord thread of a ticket No. 30, made nominally from six strands of a No. 60 yarn, would run 8,400 yards to the pound. On the basis of a specific duty of half a cent per hundred yards, a pound of a 6-cord No. 30 thread would be dutiable at 42 cents. The specific duty on the combed No. 60 yarn entering into the manufacture of this 6-cord thread of ticket size 30 is according to the provisions of paragraph 901, 16 cents a pound.[30] The specific duty on the 6-cord thread is, therefore, over two and one-half times greater than on the yarn. This ratio between the specific duty on the thread and the yarn entering into its manufacture is maintained approximately throughout almost the entire range of yarn counts.

The relationship between the minimum ad valorem duties on the 6-cord thread and the yarn of which it is made is, on the other hand, variable. The ad valorem duties on the cotton yarn are progressively graduated for all counts up to 80, above which point they are fixed at 30 per cent. On thread there is but one minimum ad

[30] PAR. 901. * * * Cotton yarn, including warps, in any form, bleached, dyed, colored, combed, or plied, numbers not exceeding number 40, one-fourth of 1 cent per number per pound; exceeding number 40 and not exceeding number 120, 10 cents per pound and, in addition thereto, three-tenths of 1 cent per number per pound for every number in excess of number 40; exceeding number 120, 34 cents per pound: *Provided*, That none of the foregoing, of numbers not exceeding number 80, shall pay less duty than 10 per centum ad valorem and, in addition thereto, for each number, one-fourth of 1 per centum ad valorem; nor of numbers exceeding 80, less than 30 per centum ad valorem: *Provided further*, That when any of the foregoing yarns are printed, dyed, or colored with vat dyes, there shall be paid a duty of 4 per centum ad valorem in addition to the above duties.

ıte, 20 per cent, applicable to all ticket numbers. The ad valorem duty on yarn of 32 count, taken for illus- 18 per cent, whereas that for the 6-cord thread made of is 20 per cent. In this instance both the specific and ad ıties on the thread exceed those on the yarn entering into cture. This is true of all threads and cottons made from w No. 40. At this point the ad valorem duties on the ɔduct and the primary yarn coincide. Above No. 40, which the practical limit of yarn of short staple cotton, the ty is less but the minimum ad valorem is more on yarns reads.

ı the minimum ad valorem for yarns above 40s is greater orresponding duty on thread, in actual dollars and cents, ıe duty is considerably less. Owing to the greater amount volved in the advancement of yarn into thread, the invoice read is generally more than twice as great as the average ue of the yarn from which it is made. Hence, in the t of tariff rates on the ad valorem basis, the equivalent, in pound, of the 20 per cent duty assessed on the thread ceeds by a large margin the equivalent, in cents per pound, er ad valorem duty of 30 per cent levied on the less costly s is illustrated in the following table, which compares the ies on cotton sewing thread and the yarns used in its re.

Comparison of average invoice price and duty on typical numbers of cotton sewing thread and yarn of which made [1]

ad ticket No.	6-cord thread					
	Yards per pound	Invoice price per pound of thread [2]	Number and average import price of yarn used for manufacture of thread enumerated		Duty on thread, minimum ad valorem of 20 per cent	Duty on yarn used, minimum ad valorem of 30 per cent
			Nominal number	Price per pound	Per pound	Per pound
----------	11,200	$3.186	80	$1.636	$0.638	$0.491
----------	14,000	3.982	100	1.764	.796	.529
----------	15,400	4.438	110	1.704	.888	.511
----------	16,800	4.779	120	2.076	.956	.623
----------	18,200	5.177	130	2.076	1.036	.623

ıs of May, 1925.

[2] On basis of nominal number of yarn used.

TABLE 27.—*Cotton sewing thread and crochet, darning, and embroidery cottons—Rates of duty, 1883–1922* [1]

Act of—	Paragraph	Tariff classification or description	Rate of duty
1883	326	Spool-thread of cotton, * * *, containing on each spool not exceeding one hundred yards of thread.	7 cents per dozen spools.
		Exceeding one hundred yards on each spool, for every additional one hundred yards of thread or fractional part thereof in excess of one hundred yards.	7 cents per dozen.
1890	343	Spool-thread of cotton, containing on each spool not exceeding one hundred yards of thread.	7 cents per dozen.
		Exceeding one hundred yards on each spool, for every additional one hundred yards of thread or fractional part thereof in excess of one hundred yards.	7 cents per dozen spools.
1894	251	Spool thread of cotton, containing on each spool not exceeding one hundred yards of thread.	5½ cents per dozen.
		Exceeding one hundred yards on each spool, for every additional one hundred yards of thread or fractional part thereof in excess of one hundred yards.	5½ cents per dozen spools.
1897	303	Spool thread of cotton, including crochet, darning, and embroidery cottons on spools or reels, containing on each spool or reel not exceeding one hundred yards of thread.	6 cents per dozen.
		Exceeding one hundred yards on each spool or reel, for every additional hundred yards or fractional part thereof in excess of one hundred.	6 cents per dozen spools or reels.
		If otherwise than on spools or reels	One-half of 1 cent for each 100 yards or fractional part thereof.
		Provided, That in no case shall the duty be assessed upon a less number of yards than is marked on the spools or reels.	
1909	314	Spool thread of cotton, crochet, darning, and embroidery cottons, on spools, reels, or balls, containing on each spool, reel, or ball, not exceeding one hundred yards of thread.	6 cents per dozen
		Exceeding one hundred yards on each spool, reel, or ball, for every additional hundred yards or fractional part thereof in excess of one hundred.	6 cents per dozen spools, reels, or balls
		If in skeins, cones, or tubes, containing less than six hundred yards each.	One-half of 1 cent for each 100 yards or fractional part thereof.
		Provided, That in no case shall the duty be assessed upon a less number of yards than is marked on the spools, reels, cones, tubes, skeins, or balls: *And provided further*, That none of the foregoing shall pay a less rate of duty than	20 per cent ad valorem
1913	251	Spool thread of cotton, crochet, darning, and embroidery cottons, on spools, reels, or balls, or in skeins, cones, or tubes, or in any other form.	15 per cent ad valorem
1922	902	Cotton sewing thread	One-half of 1 cent per 100 yards.
		Crochet, darning, embroidery, and knitting cottons, put up for handwork, in lengths not exceeding eight hundred and forty yards.	One-half of 1 cent per 100 yards.
		Provided, That none of the foregoing shall pay a less rate of duty than	20 nor more than 35 per cent ad valorem.
		In no case shall the duty be assessed on a less number of yards than is marked on the goods as imported.	

[1] "Crochet, darning, and embroidery cottons" were first mentioned in the act of 1897; in previous acts they were dutiable, without specific mention, as cotton yarn.

COURT AND TREASURY DECISIONS RELATING TO COTTON THREAD AND HANDWORK COTTONS

Specific provision was made for crochet cottons, with darning and embroidery cottons, in the act of 1897. The entire clause became involved in litigation. In *Calhoun* v. *United States* (99 Fed. 424) the dutiable length of darning cotton in four 2-ply strands slightly twisted, in balls, was declared to be the length of the cotton in the condition in which imported and not the aggregate length of the strands composing it. The Board of General Appraisers followed this decision in a case upon darning and embroidery cottons (G. 4817, T. D. 22649 of 1900).

United States (150 Fed. 327 of 1906, reversing 143 Fed.
the term "embroidery cotton" was found by the Circuit
peals for the Second Circuit to have, when the act of 1897
a well-known commercial meaning excluding 5-ply yarn
per bobbins and universally wound and used on machines
ing. The proper classification was held to be as yarn.
clared that under the law use was not the test. This deci-
lied by the Board of General Appraisers under the act of
yarn used on embroidery machines to lock the stitch on
. A. 6544, T. D. 27915); to yarn in skeins from 15,000
ds each (G. A. 6730, T. D. 28803, overruling G. A. 5372,
upon thread in large skeins of about 72 inches perimeter
t; to yarn in small skeins labeled "embroidery floss"
T. D. 26070), and to similar merchandise under the act
tracts 26633, T. D. 31883 and 36780, T. D. 34871).
isions limited "embroidery cotton" to hand embroidery
l skeins.
t conclusion was reached by the Court of Customs
later decision. The rate of duty on embroidery cotton
ıan the rates on yarn in the act of 1897, under which the
, supra, was made. This decision was reversed in 1913.
f embroidery machines for a time under the act of 1909
ve an impetus to machine embroidery, and in the act of
51) a lower rate of duty was imposed on embroidery
on the finer yarns. In accordance with the decision in
se the Treasury Department continued to assess the
mporters, on the other hand, contended for the rate on
otton.
Straus v. *United States*, 7 Ct. Cust. Appls. 414, of 1917,
) carried on appeal to the Court of Customs Appeals
General Appraisers classified as "embroidery cotton"
embroidery machines in the process of making fancy or
lesigns on the face of the fabric, and classified as "yarn"
yarn on bobbins, in which form it is used as the bottom
nbroidery machines to hold the embroidered design in
yarn itself not appearing on the face of the fabric.
dverting to the impetus given to machine embroidery
1909, supra, and reading the provision in paragraph 358
leries * * * and all articles or fabrics embroidered
er by hand or machinery" as indicating a purpose to
and machine products on a parity, held the term
cottons" not restricted to those used in hand embroidery
nly in skeins, and fully sustained the importers' protests
sses of merchandise in issue. This decision was followed
41239, 41620, 41916, 42034, 42068, 42455, 42511, 42525,
In another case (Abstract 42456, of August 9, 1918)
failed to prove that the merchandise was embroidery
ıe collector's classification as "yarn" was affirmed.
yarn in 2-ply strands combined with a slight twist, in
table only for use as embroidery cotton, was held by
Department (T. D. 35873 of 1915) to be dutiable as
otton.
less litigation on spool thread than on yarns for hand-
"spool thread of cotton" comprehends was considered

at length by the Board of General Appraisers in the case under the act of 1894 (G. A. 3609, T. D. 17435). The importation consisted of 2-ply cotton thread roughly wound upon spools, bobbins, or reels, which the board declared to be interchangeable terms. The collector's classification of the merchandise as "spool thread" was sustained.

The phrase "spool thread of cotton" as used in the act of 1897 was interpreted in connection with the added clause "one-half of 1 cent for each one hundred yards or fractional part thereof, if otherwise than on spools or reels." The thread in issue was imported in skeins. Importers offered evidence to prove that the term was applied in commerce only to thread bleached or dyed and wound on spools. This view, however, was not taken by the Board of General Appraisers, which held (G. A. 6952, T. D. 30184 of 1919, following G. A. 4674, T. D. 22080 of 1900) that Congress intended to make the paragraph as enlarged include the merchandise in suit.

In another decision under the act of 1897 (G. A. 4061, T. D. 18748 of 1897) embroidery cotton in skeins was held dutiable at one-half cent for each 100 yards contained in the case, and not at the rate for each skein. This construction was against the Government.

In the act of 1909 the phrase "if in skeins, cones, or tubes, containing less than six hundred yards each, one-half of 1 cent for each one hundred yards or fractional part thereof," was substituted for "if otherwise than on spools or reels, one-half of 1 cent for each one hundred yards or fractional part thereof." This provision was construed by the Treasury Department (T. D. 30175 of 1909) to exclude embroidery cotton in small balls not exceeding 100 yards, which was classified, as before, under the provision imposing the 6-cent rate.

In a review of the legislation and litigation the Board of General Appraisers held unfinished cotton thread in the grey, intended for, and, when completed, suitable for use as, sewing thread, dutiable as "spool thread of cotton," at 15 per cent ad valorem under paragraph 251 of the act of 1913, and not as cotton yarn under paragraph 250. Commercial testimony offered by the Government was declared insufficient to upset the former rulings of the board in the presence of a legislative intent to adopt them. (G. A. 8200, T. D. 37793 of 1918; followed in Abstract 43234 of 1919.)

TABLE 28.—*Cotton sewing thread and crochet* [illegible]

Exported to—	1918	1919	1920	1921	1922	1923	1924	1925	1926
EUROPE									
Denmark	$25,930	$65,294	$3,479	$26		$785	$205	$782	$1,905
France	7,368	23,344	19,126	13,803	$3,935	12,607		18	1,151
Greece	52,821	181,634	28,330	2,160	2,668	373	774	32	
Italy	29,912	9,076	20,677		5,204	1,223		101	158
Norway	7,972	128,767	22,182			550	96		2,665
Sweden	48,403	134,378	1,042		75	1,181	1,585	2,983	8,339
Switzerland	6,060	70,567	324	293	258	2,932	2,077	1,750	3,780
Iceland and Faroe Isles	6,351	3,958	320						
Spain	11,553	424	221	60	1,127	153	1,203	1,624	969
Austria-Hungary [2]		6,832							
Belgium		187,404	1,335	300		37	20		16
Finland		13,240	34,652		4,950				1,877
Germany		435	11,846	6,766	3,383	22		211	182
Netherlands		53,437	6,290						
Poland and Danzig			48,688	11,258	3,295				
Rumania		5,116	7,797	361	2,650			200	
Russia in Europe		44,017	6,423	154	4,190		100	278	
Turkey in Europe		80,176	60,391		2,703				16
England	25	14,923	35,346	9,154	5,670	10,258	18,381	24,484	15,666
Scotland		5,728	23,618	8,084	5,038	4,840	2,423		
Ireland			3,731	3,222		50			
Jugoslavia, Albania, etc		5,784		48					
Latvia					7,528				
All other countries		330	763	1,300	7,376	444	129	235	672
Total	196,395	1,034,864	336,581	56,989	60,050	35,455	26,993	32,698	37,396
NORTH AMERICA									
Canada	885,935	1,062,744	1,480,638	540,007	647,369	559,454	507,400	318,573	362,997
Honduras	6,397	7,576	10,926	9,859	8,868	9,138	8,816	6,639	4,655
Nicaragua	8,483	13,645	30,026	5,441	7,078	8,730	6,289	8,243	5,208
Panama	27,164	23,335	37,008	27,248	24,879	17,118	13,988	16,802	11,407
Mexico	466,517	506,282	360,567	242,143	156,127	141,818	114,183	109,420	107,157
Newfoundland and Labrador	18,702	13,187	19,723	4,333	5,925	6,189	7,767	7,404	5,594
Jamaica	3,849	4,615	8,915	1,682	5,747	4,681	689	4,369	1,472
Cuba	147,408	114,533	428,917	109,595	31,205	54,417	47,141	21,674	23,159
Dominican Republic	9,894	10,519	40,099	13,363	6,525	9,828	7,018	6,679	10,999
Haiti	4,930	8,878	12,456	3,192	2,478	3,976	1,606	2,094	1,877

[illegible] only countries having imported in any one year an amount valued at $3,000.

[2] Austria and Hungary given separately after 1921.

TABLE 28.—*Cotton sewing thread and crochet, darning, and embroidery cottons—Total value of domestic exports by countries, 1918–1926*—Continued

Exported to—	1918	1919	1920	1921	1922	1923	1924	1925	1926
NORTH AMERICA—continued									
Costa Rica	$6,096	$4,410	$9,047	$3,534	$950	$2,504	$1,257	$1,329	$609
Guatemala	4,592	8,433	5,484	3,963	2,689	3,385	2,115	1,122	1,415
Salvador	1,314	2,134	4,012	1,891	3,986	12,720	2,921	3,759	6,338
Barbados	4,129	2,892	5,576	5,804	2,894	2,401	5,854	2,549	1,759
French West Indies	3,188	1,400	275						
All other countries	6,987	5,739	6,607	4,317	4,580	6,530	4,282	2,895	2,318
Total	1,605,587	1,790,322	2,460,267	976,372	911,300	842,889	731,326	504,551	546,964
SOUTH AMERICA									
Argentina	79,347	143,440	115,615	68,276	57,070	43,397	24,289	28,424	46,380
Bolivia	1,698	9,370	5,087	908	961	1,541	510	476	1,346
Brazil	56,337	136,772	116,855	23,751	20,022	22,390	14,160	16,453	37,856
Chile	81,718	71,943	40,943	16,374	13,580	17,742	12,002	20,988	17,106
Colombia	13,936	15,721	74,762	15,845	18,622	13,163	4,524	13,375	9,405
Ecuador	5,536	6,076	10,029	3,268	6,030	4,200	5,184	3,563	1,589
Peru	12,400	14,359	23,593	7,325	2,106	3,462	2,418	2,505	3,028
Venezuela	7,642	5,075	17,190	1,442	2,652	5,075	1,421	3,196	1,588
Uruguay	8,827	18,427	8,657	4,004	3,612	3,743	1,984	3,017	4,553
All other countries	1,809	4,236	2,851	137	2,453	730	214	21	132
Total	269,250	425,419	415,582	141,330	127,108	115,443	66,656	92,018	122,983
ASIA									
Dutch East Indies	8,628	6,810	8,982	1,935		224			
China	1,240	6,955	61,781	2,092	11,786	22,292	11,153	19,859	21,284
Hong Kong	896	1,021	3,809	389	340	238	244	657	325
British India	660	2,130	4,109	503	199		4,119	350	
Japan	29	6,432	7,746	1,897	3,943	6,808	8,220	2,305	3,019
Russia in Asia	44	106,907	2,943	2,394	627	729	164	245	158
Siam			169	18,156	50	15		44	
Turkey in Asia	158	11,961	3,583	132					
All other countries	2,249	3,327	1,040	75	2,169	747	299	29	206
Total	13,904	145,543	93,962	27,573	19,114	31,053	24,199	23,489	24,992

[illegible]

[illegible]

[illegible]

TABLE 28a.—*Cotton sewing thread—Domestic exports by countries, 1922–1926* [1]

Exported to—	1922		1923		1924		1925		1926	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
EUROPE										
France	3,719	$3,935	13,496	$12,607			28	$18	96	$101
Germany	4,880	3,383	15	22			250	211	158	182
Russia in Europe	7,287	4,190			100	$100	148	278		
England	2,955	5,270	5,554	8,821	10,990	15,924	20,446	22,676	12,293	15,013
Scotland	3,180	5,038	1,732	2,956	1,287	2,423				
Latvia	9,029	5,635								
All other countries	5,567	6,185	8,725	7,728	4,542	6,061	6,317	7,659	13,403	20,381
Total	36,617	33,636	29,522	32,134	16,919	24,508	27,189	30,842	25,950	35,677
NORTH AND CENTRAL AMERICA										
Canada	518,019	547,145	400,515	463,040	373,607	426,864	263,228	281,427	349,884	312,591
Honduras	5,917	6,506	5,398	6,545	5,310	7,239	5,114	5,844	4,075	4,014
Nicaragua	2,834	3,573	5,630	6,271	4,454	5,626	6,674	7,611	4,403	4,658
Panama	11,527	18,091	8,013	12,142	6,909	9,258	8,977	13,947	6,147	9,847
Mexico	153,986	126,209	96,571	99,274	89,546	83,696	64,412	72,479	73,812	84,958
Newfoundland and Labrador	4,092	4,216	4,568	4,920	6,010	6,865	4,457	5,089	4,143	4,377
Jamaica	8,844	5,187	2,769	1,654	529	464	2,887	3,208	572	677
Cuba	22,859	25,039	21,618	29,156	20,695	26,710	15,665	19,921	17,058	20,097
Dominican Republic	4,005	3,986	8,456	7,289	3,177	3,491	5,196	5,616	6,643	7,218
Haiti	2,174	2,109	3,208	3,649	1,348	1,482	2,206	2,074	1,834	1,782
Salvador	2,706	2,280	17,335	12,023	2,687	2,921	3,478	3,759	6,150	6,112
Barbados	3,316	2,791	3,108	2,324	5,319	5,703	2,379	2,511	2,097	1,391
All other countries	4,793	4,241	8,539	7,538	5,832	6,025	4,222	4,122	3,350	2,755
Total	745,072	751,373	585,728	655,825	525,373	586,344	388,895	427,608	480,168	460,462
SOUTH AMERICA										
Argentina	19,472	30,362	27,520	29,609	16,739	15,645	10,174	13,646	10,218	13,414
Brazil	8,997	16,870	10,521	17,151	8,623	12,670	10,121	14,617	22,787	31,383
Chile	4,949	5,729	7,577	9,584	5,964	7,711	8,845	12,789	7,811	11,569
Colombia	9,027	9,474	5,739	6,780	2,035	2,948	4,898	6,827	3,230	4,281
Ecuador	1,212	1,874	1,926	3,513	3,107	3,558	2,508	3,424	618	1,062
Venezuela	1,149	1,683	4,396	4,478	892	1,379	2,851	3,074	944	1,170
Uruguay	2,221	3,069	2,184	3,373	983	1,594	2,558	2,677	3,604	4,099
All other countries	2,798	3,465	2,150	2,826	1,090	1,422	1,472	1,096	2,056	2,876
Total	49,825	72,526	62,063	77,314	39,433	46,927	43,427	58,150	51,268	69,814

TABLE 28b.—*Crochet, darning, and embroidery cottons—Domestic exports, by countries, 1922–1926* [1]

Exported to—	1922		1923		1924		1925		1926	
	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value	Pounds	Value
EUROPE										
Finland	7,688	$4,950								
Poland and Danzig	4,889	3,295								
Bulgaria	4,017	2,644								
Estonia	4,053	2,644								
Greece	4,026	2,650								
Italy	4,037	2,644								
Latvia	3,026	1,893								
Rumania	3,986	2,650								
Turkey in Europe	4,041	2,644								
England	450	400	8,456	$1,437	1,103	$2,457	1,197	$1,808		
Scotland			838	1,884					352	$653
All other countries					17	28	21	48	483	1,066
Total	40,213	26,414	9,294	3,321	1,120	2,485	1,218	1,856	835	1,719
NORTH AND CENTRAL AMERICA										
Canada	111,676	100,224	100,433	96,414	70,653	80,536	32,549	37,146	45,936	50,406
Nicaragua	2,814	3,505	1,766	2,459	442	663	479	632	455	550
Panama	7,851	6,788	4,544	4,976	3,397	4,730	3,264	2,855	1,839	1,560
Mexico	22,003	29,918	29,795	42,544	19,729	30,487	15,904	27,941	12,664	22,204
Jamaica	1,127	560	4,340	3,027	167	225	913	1,161	496	805
Cuba	4,952	6,166	21,587	25,261	12,776	20,431	1,472	1,753	2,234	3,062
Dominican Republic	2,752	2,539	2,115	2,539	2,808	3,527	639	1,063	2,100	3,781
All other countries	10,399	10,227	7,585	9,844	3,294	4,383	3,358	4,392	4,309	4,134
Total	163,574	159,927	172,165	187,064	113,266	144,982	58,578	76,943	70,033	86,502
SOUTH AMERICA										
Argentina	42,346	26,708	10,186	13,788	4,275	8,644	8,370	14,778	25,212	32,966
Brazil	1,338	3,152	3,494	5,239	819	1,490	1,189	1,836	4,277	6,473
Chile	18,336	7,851	5,830	8,158	2,304	4,291	4,513	8,199	3,865	5,537
Colombia	10,105	9,148	6,176	6,383	1,151	1,576	4,042	6,548	2,583	5,124
Ecuador	4,386	4,156	334	687	898	1,626	97	139	257	507
All other countries	2,299	3,567	2,304	3,874	1,163	2,102	1,578	2,368	1,480	2,562
Total	78,810	54,582	28,324	38,129	10,610	19,729	19,789	33,868	37,674	53,169

Total	2,151	3,502	1,775	2,313	839	1,382	1,570	1,809	6,307	6,439
OCEANIA										
Philippine Islands	5,187	7,191	9,250	8,740	1,305	1,814	5,716	10,390	6,645	9,614
French Oceania	1,013	1,182	3,025	2,937	583	888	41	45	30	40
New Zealand	504	711	5	14						
Australia			1,238	2,829	1,382	1,690	8,626	9,600	2,676	1,918
Total	6,704	9,084	13,518	14,520	3,270	4,392	14,383	20,035	8,451	11,572
AFRICA										
Portuguese East Africa			514	695						
All other countries	4	2					2,163	1,538	100	303
Total	4	2	514	695			2,163	1,538	100	303
RECAPITULATION										
Europe	40,213	26,414	9,294	3,321	1,120	2,485	1,218	1,856	835	1,719
North and Central America	163,574	159,927	172,165	187,064	113,266	144,982	56,578	76,943	70,033	86,502
South America	78,810	54,582	28,324	38,129	10,610	19,729	19,780	33,868	37,674	53,169
Asia	2,151	3,502	1,775	2,313	839	1,382	1,570	1,809	6,307	6,439
Oceania	6,704	9,084	13,518	14,520	3,270	4,392	14,383	20,035	8,451	11,572
Africa	4	2	514	695			2,163	1,538	100	303
Grand total	291,456	253,511	225,590	246,042	129,105	172,970	97,701	136,049	123,400	159,704

[1] Exports here listed are included in Table 28.

1129—27——6

TABLE 29.—*Cotton sewing thread prices in Germany* [1]

[The following price lists were published by the Syndicate of German Sewing Thread Mills at Munich (Vertriebsgesellschaft Deutscher Nähfaden Fabriken) on May 17, 1926, October 18, 1926, and January 24, 1927 (prices in Reichsmarks, per 100 wooden rolls)]

	May 17, 1926	Oct. 18, 1926	Jan. 24, 1927
4-ply upper thread (Obergarn):	*Reichsmarks*	*Reichsmarks*	*Reichsmarks*
1,000 meters Nos. 20 and 24, white or black	102.00	102.60	100.00
1,000 meters Nos. 30–60, white or black	83.00	79.00	75.00
1,000 meters No. 70 and finer, white or black	67.00	64.00	61.00
200 meters Nos. 20 and 24, white or black	22.00	22.00	21.50
200 meters Nos. 30, 36, 40, or finer, white or black	16.00	15.00	14.50
200 meters No. 40, colored	20.00	19.00	18.50
2-ply under thread (Untergarn):			
1,000 meters Nos. 40–60, white or black	50.00	48.00	48.00
1,000 meters No. 70 or finer, white or black	40.00	39.00	38.00
2-ply under thread, II quality: 1,000 meters Nos. 40–60, white or black	45.00	42.00	42.00
3-ply thread for clothing industry (Konfektion): 1,000 meters, Nos. 30, 36, 40, 50, white or black	54.00	51.00	50.00
3-ply mercerized thread (Glanz):			
500 meters No. 4, white or black	59.00	55.00	55.00
500 meters Nos. 8 and 12, white or black	47.00	45.00	45.00
500 meters No. 24, white or black	36.00	34.00	32.50
500 meters No. 30, or finer, white or black	34.00	32.00	30.50
100 meters No. 12, white or black	11.00	10.50	10.50
3-ply dull thread (Matt):			
500 meters No. 24, white or black	36.00	34.00	32.50
500 meters No. 30, or finer, white or black	34.00	32.00	30.50
3-ply dull thread, II quality:			
500 meters Nos. 30, 36, 40, 50, white or black	28.00	26.50	24.50
200 meters Nos. 30, 36, 40, 50, white or black	13.00	12.50	11.00
6-ply thread, dull (Matt):			
500 meters Nos. 8–12, white or black	70.00	68.00	----
500 meters Nos. 14–24, white or black	61.00	58.00	55.00
500 meters Nos. 30–36, white or black	56.00	54.00	52.00
500 meters Nos. 40–70, white or black	47.00	46.00	44.00
Cross-wound (Kreuzwickel).			
500 meters Nos. 8–12, white or black	68.00	66.00	----
500 meters Nos. 14–24, white or black	59.00	56.00	----
500 meters Nos. 30–36, white or black	54.00	52.00	----
500 meters Nos. 40–70, white or black	45.00	44.00	----
1,000 meters No. 24, white or black	----	----	106.00
1,000 meters Nos. 30–36, white or black	108.00	104.00	100.00
1,000 meters Nos. 40–70, white or black	90.00	88.00	84.00
6-ply thread, mercerized (Glanz and Seidenglanz):			
500 meters No. 6, white or black	----	----	80.00
500 meters Nos. 8–12, white or black	70.00	68.00	66.00
500 meters Nos. 14–24, white or black	61.00	58.00	----
500 meters Nos. 14–16, white or black	----	----	58.00
500 meters Nos. 20–24, white or black	----	----	55.00
500 meters Nos. 30–36, white or black	56.00	54.00	52.00
500 meters Nos. 40–70, white or black	47.00	46.00	44.00
Cross-wound (Kreuzwickel).			
500 meters No. 6, white or black	----	----	78.00
500 meters Nos. 8–12, white or black	68.00	66.00	64.00
500 meters Nos. 14–24, white or black	59.00	56.00	----
500 meters Nos. 30–36, white or black	54.00	52.00	50.00
500 meters Nos. 40–70, white or black	45.00	44.00	42.00
1,000 meters Nos. 8–12, white or black	----	----	128.00
1,000 meters Nos. 14–16, white or black	----	----	112.00
1,000 meters Nos. 20–24, white or black	----	----	106.00
1,000 meters Nos. 30–36, white or black	108.00	104.00	100.00
1,000 meters Nos. 40–70, white or black	90.00	88.00	84.00
3-ply straw hat thread:			
2,000 meters No. 60, white or black	100.00	95.00	93.00
2,000 meters Nos. 80 and 100, white or black	88.00	84.00	80.00
2,000 meters Nos. 80 and 100, colored	100.00	97.00	95.00
Stringing thread (Reihgarn), cross-wound:			
No. 24, 20 gram spools, per kilogram	6.00	5.40	5.40
No. 24, 50 gram spools, per kilogram	5.75	5.15	5.15
An additional charge of	[2] 3.00	[2] 3.00	[2] 4.00

[1] Report by American consulate at Dresden, Germany. One meter equals 1.0936 yards; one gram equals 15.432 grains; one kilogram equals 2.2046 pounds.

[2] This additional charge per 100 rolls is made for colored yarn of the above grades when not less than 200 rolls of each color are bought. Cross-wound spools containing 2,000 or 1,000 meters are 2 marks per 100 spools less than wooden rolls.

UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPH 336 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

BROOMS AND BROOM CORN

Paragraph 336:
Brooms
Brushes. (For treatment, see Par. 337)

Paragraph 434:
Broom Corn

REVISED EDITION

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this, industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act, reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and index," the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Charles F. Yauch and Miss Evelina Kean, of the Commission's staff, and of others.

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BROOMS.

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BROOMS MADE OF BROOM CORN.

BROOMS.

SUMMARY.

Kinds.—According to use, brooms may be classified as follows: (1) Warehouse brooms, wound or metal cased, (2) parlor brooms, (3) toy or hearth brooms, (4) whisk brooms.

Countries of greatest production.—It is estimated that nine-tenths of the world's production of brooms are made in the United States. Canada and Cuba also have broom factories. Japan finds markets for her rice-straw brooms, but they are inferior to articles made from American broom corn. Italy specializes in a soft broom for polished floors made of the native piuma grass. Straw brooms are little used in European countries.

Substitutes.—Vacuum cleaners, carpet sweepers, and patented mops are some of the inventions which, in a measure, replace brooms. None can be put to such a variety of uses as the broom.

Materials.—The ordinary broom is composed of two parts, the handle and the broom or brush. The handles are made by manufacturers of woodenware in States that have abundant supplies of light woods. Broom corn is generally used for the brush. The straw is the seed-bearing portion of a species of sorghum. This is a valuable crop in dry regions and is extensively cultivated throughout the Middle West. Brooms for heavy sweepings are made of bamboo and rattan. Rice straw, hickory splits, Spanish rush, palmetto fiber, and African bass are among the other materials used for this purpose. Articles such as wire, nails, tacks, tin locks, twine, and iron bands are also necessary in broom making.

Process of manufacture.—The operations are so simple that most of the work can be done by hand, but numerous inventions have reduced it almost entirely to a machine process. The corn is prepared for the broom by sorting, sizing, and bleaching, frequently followed by dyeing. The actual broom making consists in winding the corn onto the handle with wire, stitching with several rows of twine, and final trimming or clipping. After a special drying process the brooms are labeled and packed for shipment.

Labor.—It is not difficult to acquire skill in broom manufacture. It is an industry frequently adopted by asylums and penal institutions and is an excellent trade for the blind.

Manufacturing centers.—The manufacture of brooms is not restricted to any one area. The towns of central New York, especially Amsterdam, which has an annual output of over a million dollars, lead in the production of brooms.

Imports.—As broom manufacture is so essentially an American industry, there is practically no foreign competition. The greatest value ever imported was $13,524 in 1918, which, compared to the domestic production of over $14,000,000, is insignificant.

Exports.—The exports are greatly in excess of the imports, yet are small compared to the total output. They amount to some-

thing over $100,000 annually, the largest amount having been $292,729 in 1919, calendar year.

Effects of the war.—Following the general trend, prices on materials for broom manufacture have gone steadily upward. The increase in broom-corn values from about $80 a ton to between $300 and $400 has been the most sensational. The price of brooms has advanced proportionately.

Tariff considerations.—Foreign competition has never seriously troubled domestic broom manufacturers. They are apparently not greatly concerned over the tariff. By the tariff act of 1913 the duty on brooms was reduced from 40 per cent to 15 per cent ad valorem, and broom handles and broom corn were placed on the free list.

Brooms—Summary table.

Year.	Domestic production.	Imports for consumption.	Domestic exports.	Ratio to production.		Value (imports for consumption).	Amount of duty.	Actual or equivalent ad valorem rate.
				Imports.	Exports.			
				Per cent.	*Per cent.*			
1910	[1] $14,431,593	$4,140		0.03		$4,140	$1,656.00	40.00
1911		4,592				4,592	1,837.00	40.00
1912		4,329				4,329	1,732.00	40.00
1913		2,463	$183,643			2,463	985.00	40.00
1914	14,084,959	3,640	135,207	.02	0.96	3,640	700.00	19.23
1915		6,302	107,171			6,302	406.00	6.70
1916		5,379	180,171			5,379	807.00	15.00
1917		9,023	121,216			9,023	1,332.75	14.77
1918		13,575				13,575	2,028.00	14.93
1918 [2]		7,831	157,885			7,831	1,173.00	14.97
1919 [2]		7,874	292,729			7,874	1,173.00	14.89
1920 [2]		21,902	330,267			21,902	3,280.00	14.97

[1] Figures from Federal census, 1909.
[2] Calendar year.

General Information.

1913 TARIFF PARAGRAPH.

336. Brooms made of broom corn, straw, wooden fiber, or twigs, 15 per centum ad valorem; * * *

KINDS.

It is difficult to enumerate the various classifications of brooms because of the great number of inventions and constructions for special purposes. The most comprehensive classes are: (1) Warehouse brooms, (2) parlor brooms (3) toy or hearth brooms and (4) whisk brooms. The first class comprises heavy brooms used by railroads, oil mills, factories, and warehouses, and may differ in material or construction according to the specific need. To add greater strength brooms for the industrial trade are often made in a metal band 2 inches wide and encircled by another band seven-eighths of an inch wide to reinforce the twine stitching. One example of a special broom is that used by railroads for sweeping frogs and switches. The brush part, usually of stiff material such as reed or rattan, is made thin enough to be inserted in the narrow cracks between the rails.

Light household or parlor brooms are smaller and more attractively finished than warehouse brooms. They come in many sizes and with handles of different lengths for ordinary sweeping or for cobwebbing,

but in the main the method of manufacture in every case is identical. With some improvement in workmanship it is the same as 100 years ago; a bunch of straw is bound to a wooden handle with wire and secured in position by stitching. Toy or hearth brooms are simply diminutive parlor brooms convenient for children or for cleaning old-fashioned brick hearths.

Whisk brooms have short handles to allow a free brisk movement in cleaning clothes or furniture. As they are often an accessory to a dressing table, the handles may be elaborate and costly, of gold, silver, or ivory, or if of less expensive material, ornamented with velvet or nickel.

HISTORY OF THE INDUSTRY.

Because of the simple construction of the broom and its necessity as a household article, the custom of home manufacture was long retained. The broom corn was easily raised and the process of tying the brush to a handle required little dexterity, though the result may have been exceedingly crude. Some Quakers in the town of Hadley, Mass., are said to have been the first to make brooms as a commercial enterprise. Later they moved to Amsterdam, N. Y. A hand factory was started at Fort Hunter, N. Y., in 1857. Two years later the partners in the firm separated and independently opened the first two power broom factories in the world. Various inventions and improvements of machinery have made broom manufacture almost entirely a mechanical process and transformed it from a home into a factory industry.

COUNTRIES OF LARGEST PRODUCTION.

Broom manufacture is primarily an American industry. Straw brooms are little used in European countries. Broom making is not, as in America, a factory industry. The straw broom, known in every home in the United States, seems to be the product of the Western Hemisphere, a fact due to usage and custom rather than to geographic conditions governing the distribution of materials. Establishments similar to those in the United States are prospering in Canada and Cuba; indeed, about the only competition feared by American manufacturers is from the Canadian output. Broom making is a home industry in China and Japan. The Japanese manufacture some for export, but the inferior quality of their brooms made from rice straw, which lacks the durability of American broom corn, eliminates them as serious competitors.

In Italy a compact but soft broom, effective for sweeping highly-polished floors, is made of several bunches of piuma grass, a product of Lombardy. The bunches of fiber are usually secured by a vegetable binder such as raffia.[1]

SUBSTITUTES.

Many inventions excel in some line of cleaning, but none have the universal adaptability of the old-fashioned broom. The vacuum cleaner is a remarkable labor-saving device, but its initial cost places it outside the range of possibility for the average housewife. Carpet sweepers serve their purpose but, as their name implies, are limited

[1] Daily Consular and Trade Reports, Jan. 6, 1914, p. 64.

in their functions. For hardwood floors, mops or hair brushes are usually preferred to a corn broom, as they more easily remove the dust from the polished surface and with less danger of scratching.

MATERIALS.

The ordinary broom is composed of two parts, the handle and the broom or brush. Beech, birch, maple, fir, ash, gum, and other light woods are used for the handle which is simply a turned stick sandpapered, stained, varnished, or otherwise finished to suit the trade.

Michigan, Wisconsin, New York, Pennsylvania, and Maine supply most of the wood used in the manufacture of handles. Redwood, found along the Pacific coast, is used by manufacturers in the West. The broom manufacturer buys the handles ready for the broom. They are made by entirely different concerns, usually interested in a variety of woodenware products. Some of the largest companies are located in Michigan and Wisconsin. Bamboo handles are imported from Japan and China and lacquered handles, claimed to have a superior finish to the American article, are also sent by the Japanese to this country.

For the brush portion of the broom the most universally used material is broom corn. The straw is obtained from the panicle of the plant, which is a species of sorghum. The panicle grows at the end of a stalk 10 to 15 feet high in the standard broom corn and 4 to 6 feet high in the dwarf variety. Some time before the harvesting the panicle is "tabled" or bent to prevent it from growing crooked because of the weight of the maturing seed. While still green the heads with 6 inches of stalk are cut off, cleaned of the seed by hand or machine, and spread in the shade to dry, as the sun injures the color and quality. It is a profitable crop, adapted to dry regions. About 1,000 to 1,200 pounds of dry brush are obtained from 1 acre, and two crops may be gathered in one year. Oklahoma, Illinois, Kansas, and Texas, in the order named, lead in broom corn production. It is extensively raised in many other States, including California, Colorado, New Mexico, Nebraska, Missouri, Indiana, and Tennessee. Illinois corn is said to be the best, although that from the Rio Grande Valley in Texas is of excellent quality.

Broom corn brings the best price when the color is bright green, for which it must be cut in the bloom stage or about 80 days after planting. Discoloration from rain, or being overripe, will often cause a reduction of 50 per cent in the price.

In times of scarcity broom corn is imported from Italy, Austria-Hungary, and Argentina, but the grade is considered inferior to that of the American product.

Warehouse brooms are put to such hard usage that the corn is generally supplemented by split bamboo or rattan as "fillers" to give additional stiffness. For extremely heavy sweepings, all-rattan and all-bamboo brooms are made. Split bamboo or split cane and round rattan are used for snow and switch brooms for railroads.

African bass fiber is the most satisfactory material for packing-house brooms, as it is not affected by hot or cold water and will outwear several of the ordinary corn brooms.

Brooms made in China and Japan are generally of rice straw, but this material is not used extensively in the United States.

The rattan and bamboo, the African bass, bassine, and kittool are imported. Other domestic materials, besides broom corn, from

which brooms are sometimes made, are Spanish rush and palmetto fiber from Florida, and hickory splits from Alabama.

Spanish rush is a wild grass which, since the rise in price of broom corn, has been made use of for the centers, and in some cases for the outside, of cheap brooms. Its wearing qualities can not compare to broom corn, and its substitution should be regarded as fraudulent unless the article is properly labeled.

Wire, nails, tacks, staples, and strips of tin known as tin locks are used to secure the brush to the handle. Twine and iron bands hold the straw in position. These materials are all domestic, except the twine, which is made of imported flax.

The finishings comprise velvet, labels, stains, dyes, and, for whisks, nickel caps. Of these, the only imported article is dye, which, before the war, was obtained from Germany. Manufacturers use cheesecloth, paper, cartons, or wooden cases, or sometimes several of these articles for packing. These may all be obtained in the United States. Brimstone, or sulphur, used for bleaching the corn is also a domestic product.

PROCESSES OF MANUFACTURE.

The manufacture of a broom involves 14 or 15 distinct operations. The broom corn is received at the factory in bales weighing about 300 pounds each. The brush must be sorted according to length. This operation, called sizing, is done by a machine which also cuts off surplus stock. Removing seeds, which may still remain after thrashing, is accomplished by running the brush through the two rollers of the scraping machine fitted with pins or wires. Handwork is necessary for the next operation, sorting to grade and color, but the hurl cutting, ripping, and shaking are done by machinery. As a final preparation for the broom, the corn is bleached with brimstone, or, if necessary, dyed with anilin dyes. For the ordinary broom of the wound style, the brush is secured to the handle by wrappings of wire held in place with nails, and finished with either a velvet strip or a tin broom lock, or both. This is partly done by hand and partly by the winding machine. In this stage of its manufacture the broom is conical, but in the power-sewing machine it is shaped in a vise and stitched with three to six rows of twine. Some seed may still be left in the brush and these are disposed of by a final scraping. The last operation consists in clipping the end of the broom to make it even, after which it is sent to a specially prepared room where the surplus moisture is removed. The finished brooms are bunched in dozens, labeled, and packed for shipment.

LABOR.

In the larger factories the processes are almost entirely automatic. Machinery, however, is not essential for successful broom manufacture. As all the work can easily be done by hand or with the use of simple machinery, it is an industry peculiarly suitable for small establishments, for penitentiaries, and for other State institutions. Because of the ease and safety with which even the power machines may be operated the broom-making trade can readily be acquired by the blind. Most State institutions and vocational schools for the blind make provisions for instruction in this trade.

MANUFACTURING CENTERS.

The industry is widely distributed over the whole country. The is hardly a city without a broom factory, but few are of any si The greatest output of any one establishment does not amount more than a few hundred thousand dollars a year. Amsterda N. Y., has probably a larger production than any other city. cording to Brooms, Brushes, and Handles, for December, 1 7,870,000 brooms, valued at $1,750,000, were manufactured ther one year. The total production for the United States for 1914 over $14,000,000.

Although the industry is not seasonal to the extent that ot are, there is more activity in the spring because of the deman brooms for the spring cleaning.

IMPORTS—REVENUE.

Imports have never been large enough to be a source of anno to the domestic manufacturer, nor a source of revenue to the Go ment. The average imports for consumption for the eight 1910–1917, has been about $4,000. Statistics for imports by tries have not been shown since 1914, but prior to that Japa the principal country of origin, and it is reasonable to suppos she still is. The imports for 1917 were $9,023, about twice the age for the period considered. Imports were highest in 1920, they amounted to $21,871.

EXPORTS.

In 1913 domestic exports of brooms were, for the first tim included with brushes. Exports amounted to $183,643 in 191 did not again equal that figure until 1919, calendar year, when amounted to $292,729. The export trade is principally with Ca Ireland, and countries of the Americas. Ireland is first in the sumption of American brooms.

EFFECT OF THE WAR.

The broom industry, like every other, has experienced adv in the cost of material and labor during and since the war. The of brooms has soared correspondingly.

Brooms—Production in United States—States.[1]

[From Federal census.]

States.	1909	1914	States.	1909	19
New York	$2,214,000	$2,301,000	Missouri	$708,000	$6
Illinois	1,465,000	1,533,000	Iowa	649,000	5
Pennsylvania	1,261,000	1,259,000	All other	6,277,000	6,1
Ohio	1,079,000	840,000			
Indiana	779,000	750,000	Total	14,432,000	14,0

[1] The manufactures of brooms and that of brushes were shown as one industry at the censuses from to 1904, inclusive.

Brooms—Production in United States—Cities.

[From Federal census.[1]]

	1914, value.		1914, value.
Indianapolis, Ind.	$182,230	Chicago, Ill.	$691,198
Kansas City, Mo.	80,319	Cincinnati, Ohio	131,867
St. Louis, Mo.	142,059	Philadelphia, Pa.	219,425
Baltimore, Md.	208,122	New York City	315,837

Brooms [1]—Imports by countries (fiscal years).

Imported from—	1909	1911	1912	1913	1914
Hongkong	$433	$640	$891	$815	$890
Japan	391	1,661	2,101	831	927
England	121	487	39		214
Italy		252	205	4	46
All other	268	674	429	325	833
Total	1,213	3,714	3,665	1,975	2,910

[1] Included in "all other articles" in 1910; included in "all other manufactured articles" after 1914.

Brooms, made of broom corn, straw, wooden fiber, or twigs—Imports for consumption—Revenue.

	Rate of duty.	Quantity.	Value.	Duty collected.	Valur per unit of quantity.	Actual or computed ad valorem rate.
Fiscal year:						*Per cent.*
1908	40 per cent		$2,495	$998		40.00
1909	do		1,347	538		40.00
1910	do		4,140	1,656		40.00
1911	do		4,592	1,836		40.00
1912	do		4,329	1,731		40.00
1913	do		2,463	985		40.00
1914	do		616	246		40.00
1914	15 per cent		3,024	453		15.00
1915	do		2,705	405		15.00
1916	do		5,379	806		15.00
1917	do		8,885	1,332		15.00
1918	do		13,524	2,028		15.00
Calendar year:						
1918	do		7,820	1,173		15.00
1919	do		7,822	1,173		15.00
1920	do		21,871	3,280		15.00
1921 [2]	do		8,262	1,239		15.00
FROM PHILIPPINE ISLANDS.						
Fiscal year:						
1910	Free		$250			
1911	do		13			
1915	do		3,597			
1916	do		5			
1917	do		138			
1918	do		51			
Calendar year:						
1918	do		11			
1919	do		52			
1920	do		31			

[1] Census figures for cities are shown by industries for cities of over 50,000 inhabitants. Amsterdam, N. Y., a great broom center, is therefore not shown by industries in census reports. Brooms, Brushes, and Handles, December, 1915, gives the value of brooms produced in Amsterdam, N. Y., as $1,750,000.

[2] Six months ending June 30, 1921.

Brooms—Domestic exports.

FISCAL YEARS.

Exported to—	1909 [1]	1910 [1]	1911 [1]	Exported to—	1909 [1]
Canada	$106,546	$169,175	$194,480	Netherlands	$13,646
Germany	63,659	65,723	125,140	New Zealand	8,404
Cuba	37,703	31,004	27,774	Brazil	5,505
Australia and Tasmania	34,710	40,039	50,849	Ecuador	5,145
Mexico	34,260	39,624	44,272	Peru	4,918
Panama	30,842	48,461	26,828	British India	4,274
Ireland	25,904	8,242	34,044	Scotland	3,192
Philippine Islands	22,430	41,585	41,786	All other	61,695
England	17,513	33,323	26,443	Total	494,681
British South Africa	14,335	11,260	18,636		

Exported to—	1912 [1]	1913	1914	Exported to—	1912 [1]
Canada	$222,764	$21,219	$16,557	Netherlands	$23,216
Germany	55,267	5,802	565	New Zealand	14,130
Cuba	30,849	2,593	3,091	Brazil	3,583
Australia	57,323	5,183	1,001	Ecuador	3,634
Mexico	43,003	10,448	6,195	Peru	7,612
Panama	28,479	14,368	17,376	British India	4,287
Ireland	27,605	31,974	30,773	Scotland	3,913
Philippine Islands	25,252	13,033	4,188	All other	95,064
England	35,414	1,461	517	Total	693,223
British South Africa	11,828	6,401	7,233		

Exported to—	1915	1916	1917	Exported to—	1915
Canada	$8,054	$6,981	$11,119	New Zealand	$852
Cuba	2,160	2,947	4,481	Brazil	328
Australia	1,222	773	330	Ecuador	639
Mexico	6,708	11,687	25,196	Peru	1,811
Panama	20,393	15,500	19,425	British India	132
Ireland	24,740	49,319	.....	Scotland	3,949
Philippine Islands	2,592	6,138	3,746	All other	24,966
England	922	7,189	8,128		
British South Africa	7,862	5,678	1,675	Total	107,330

CALENDAR YEARS.

Exported to—	1918	1919	1920	Exported to—	1918
Canada	$24,801	$16,615	.....	New Zealand	$560
Germany	.....	11	.....	Brazil	624
Cuba	14,531	15,267	.....	Ecuador	450
Australia	540	1,924	.....	Peru	5,919
Mexico	40,066	25,553	.....	British India	92
Panama	19,022	25,150	.....	Scotland	.....
Ireland	.....	113,900	.....	All other	50,973
England	.....	240	.....		
British South Africa	307	1,325	.....	Total	157,885

[1] Includes brushes.

Brooms—Rates of duty.

Act of—	Par.	Tariff classification or description.	Ra
1883	403	Brooms of all kinds	25
1890	427	* * * brooms of all kinds, * * *	40
1894	314	* * * brooms	20
1897	410	* * * brooms * * *	40
1909	423	* * * brooms * * *	
13	336	Brooms, made of broom corn, straw, wooden fiber, or twigs	15

COURT AND TREASURY DECISIONS.

Bundles of bamboo strips about one-eighth of an inch wide and 6½ inches long, tightly tied together at one end with similar bamboo or rattan strips, and used to clean sinks, were held by the Board of General Appraisers dutiable as brooms under paragraph 336 of the act of 1913. (Abstract 38158, T. D. 35696.) Abstract 38158 was followed by the board upon an unsatisfactory record, without approving the action of the collector. (Abstract 40232.) Customs officers were instructed by the Treasury Department to continue to classify such articles as brushes, under paragraph 336, pending a judicial determination of the question.

Abstract 38158 was again followed by the board in Abstract 41549. Owing to the unsatisfactory nature of the record in Abstract 41549 customs officers were informed that a new case would be made, and instructed still to classify the merchandise as brushes under paragraph 336 of the act of 1913. (T. D. 37502.)

An importation described as bamboo pot scrubs, classified as brushes under paragraph 336 of the act of 1913, were held dutiable as brooms under the same paragraph. The Board of General Appraisers, referring to the instructions of the Treasury Department in T. D. 37502, supra, said:

> There being no change in the law, and the facts being the same, the unreversed decisions of this board, which is the only customs court of original jurisdiction, are as binding and conclusive as a final determination of the question presented as could be found in the decision of any other court to which causes may be carried. The customs officers may not make cases, as suggested by the department letter. The customs officers examine the goods and classify them according to law and fact. If they are found identical in character with goods already passed upon, on appeal to this court the last unreversed decision of this court on the subject is the law of the case. If a different state of facts is found to exist, the collector may act according to the facts, and, if a protest is entered, on the trial of the case the testimony may or may not justify his action.

Patent rotary wire brushes with four rows of phosphor bronze bristles used in connection with an apparatus for cleaning the Fourdrinier wire of a paper-making machine, are dutiable as brushes within the meaning of that word as used in this paragraph. (Abstract 37023, T. D. 34984, of 1914.) *Jewelry brushes*, consisting of brass scratch brushes used for polishing gold and jewelry, are dutiable as brushes under this paragraph rather than as wire under paragraph 114. (Abstract 36472, T. D. 34763, of 1914.) *Toothbrushes and bamboo baskets* containing cardboard trays in which the toothbrushes are packed, the baskets used upon the counters of retailers to display the toothbrushes, were held dutiable under paragraph 175 and this paragraph, the baskets being treated as unusual coverings. (Abstract 43037, of 1919, following G. A. 7592, T. D. 34676, of 1914, relative to show cases filled with pipes and to be subsequently refilled.) *Boot wipers*, consisting of an iron stand and two brushes, were held dutiable as entireties at the rate applicable to the component acticle of chief value. (G. A. 7802, T. D. 35846, of 1915.) A *rubber mat*, oval in shape, in which are set by means of adhesive material bristles of the length and character of the bristles in a hairbrush, capable of use as a hairbrush, was held dutiable under the provision for brushes under this paragraph either directly or by similitude. Articles in form, shape, and design similar to if not identical with the ordinary hairbrush, is in effect a hairbrush minus the handle. (Abstract 40862, of 1917.)

Merchandise invoiced as "*reversible cotton bath pads*" and "*cotton bath straps*," and composed of cotton and loffah, classified as brushes under this paragraph, was found not to respond to the definition heretofore given of brushes in the construction of the paragraph, but as the component material of chief value was not shown the protest was overruled. (Abstract 41242, of 1917.) A *round wooden stick* about 18 inches long, at one end of which is a whisk effect produced by small shavings of the stick turned down and bound together, were found not to be capable of use as brooms or brushes, but held dutiable as manufactures of wood under paragraph 215 of the act of 1909. (United States *v.* Swedish Produce Co., 4 Ct. Cust. Appls., 330, of 1913.) *Clarinet*

cleaners consisting of twisted pieces of wire and having yarns or threads run nearly at right angles with the wire were held dutiable as brushes under paragraph 423 of that act. (T. D. 32512, of 1912.) *Miniature feather dusters* were held to fall within the terms of paragraph 423 of the act of 1909 as "feather dusters of all kinds" and not dutiable as toys. (United States *v.* Scheuer, 4 Ct. Cust. Appls., 37, of 1913.)

Twigs, probably of willow, closely bound together in bundles securely fastened at one end and of substantial strength and apparent durability, were found to be brushes known as whisk brooms, and were held dutiable under paragraph 423 of the act of 1909. (United States *v.* Swedish Produce Co., 4 Ct. Cust. Appls., 331, of 1913.) Brooms of willow twigs, bunched together and tied at the heavy ends with wooden thongs, about 1 foot in length and suitable for various purposes, said to be used in Sweden and among Swedish people for beating eggs and gravy and for other culinary purposes, were held dutiable under the first clause of paragraph 336 as brooms rather than under the latter part of the paragraph as brushes. (Abstract 40781, of 1917.) So-called bamboo sink brooms or brushes were held to be dutiable as brooms under paragraph 336. (Abstract 41549, of 1917.)

BROOM CORN.

General Information.

1913 TARIFF PARAGRAPH.

434. Broom corn. Free.

DESCRIPTION AND USES.

Broom corn belongs to the sorghum group of plants. Two kinds, "standard" and "dwarf" are commonly grown. The dwarf is produced in the semiarid regions of the Southwest, the standard in the more humid sections of Illinois, Kansas, Oklahoma, and Texas. The standard bush is 18 to 30 inches long, used largely in carpet brooms; the dwarf makes a brush 1 or 2 feet long, such as the whisk and other small brooms. Special equipment in the form of drying sheds, thrashers, and balers is required in broom-corn production.

PRODUCTION.

Production of broom corn is from 52,000 to 57,000 tons, with normal average value of $5,000,000. In 1917 the farm value of 57,40[illegible] tons was $16,800,000. The principal producing States are Oklahom[illegible] and Texas. The product for 1920 has been estimated at 33,000 tons valued at $4,263,000.[1]

IMPORTS.

Imports before the war came principally from Austria-Hungary and Italy. In 1910 they amounted to $934,000, of which $373,04[illegible] originated in Austria-Hungary and $290,784 in Italy. Since 191[illegible] imports have varied greatly, and they have in only one year, 191[illegible] amounted to approximately one-half of the 1910 figures.

[1] Monthly Crop Report, Dec., 1920, Dept. of Agr.

EXPORTS.

The export trade in broom corn is principally with Canada and Cuba. In the year 1918, when exports amounted to 3,992 tons, valued at $1,018,111, and Cuba 886 tons, valued at $253,356. Imports were lowest in 1914, in which year 2,959 tons, valued at $327,426, were exported.

TARIFF HISTORY.

The act of 1890 imposed a duty of $8 per ton, and that of 1909 a duty of $3 per ton. Under the acts of 1894, 1897, and 1913 no duty was imposed.

Broom corn—Production in United States—States—Acreage, production, and value, by States, 1919, and totals 1915–1919.[1]

[Leading producing States.]

State and year.	Acreage.	Average yield per acre.	Production.	Average farm price per ton Nov.15.	Farm value Nov. 15.
	Acres.	*Tons.*	*Tons.*		
Illinois	15,200	0.275	4,200	$270.00	$1,134,000
Missouri	4,400	.205	900	170.00	153,000
Kansas	20,000	.167	3,300	150.00	495,000
Texas	58,000	.186	10,800	140.00	1,512,000
Oklahoma	137,000	.196	26,900	149.00	4,008,000
Colorado	17,000	.175	3,000	100.00	300,000
New Mexico	20,000	.200	4,000	125.00	500,000
Total	271,600	.196	53,100	152.58	8,102,000
1918	366,000	.158	57,800	220.93	12,770,000
1917	345,000	.166	57,400	292.75	16,804,000
1916	235,200	.165	38,726	172.75	6,690,000
1915	230,100	.227	52,242	91.67	4,789,000

[1] Yearbook of the Department of Agriculture, 1919.

Broom corn—Imports by countries.

FISCAL YEARS.

Imported from—	1910		1911		1912	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
Austria-Hungary	3,007	$373,048	425	$34,420	646	$70,968
France	1,574	158,665			6	507
Germany	67	6,717	52	4,735	10	1,497
Italy	2,213	290,784	89	10,991	609	78,754
Argentina	100	8,972				
All other	698	95,692	54	4,335	75	6,243
Total	7,659	933,878	620	54,481	1,346	157,969

Imported from—	1913		1914		1915	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
Austria-Hungary	67	$5,922	537	$56,593	103	$13,904
Germany			104	12,068		
Italy	9	988	573	68,125	1	261
Argentina			21	1,285		
All other	111	7,810	37	3,659	25	1,747
Total	187	14,720	1,272	141,730	129	15,912

Broom corn—Imports by countries—Continued.

FISCAL YEARS—Continued.

Imported from—	1916		1917		1918	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
Italy	158	$24,643			374	$11
Argentina			12	$2,586	2,107	3
All other			18	2,157	1	
Total	158	24,643	30	4,743	2,482	4

CALENDAR YEARS.

Imported from—	1918		1919		1920	
	Tons.	Value.	Tons.	Value.	Tons.	Val
Italy	499	$150,020	1	$511		
Argentina	1,260	212,239				
All other	7	2,677	9	1,099		
Total	1,766	364,936	10	1,610	1,361	$

Broom corn—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actu co m ad va ra
		Tons.				*Per*
1911	$3 per ton	620	$55,619	$1,861	$89.64	
1912	do	1,341	157,969	4,024	117.77	
1913	do	186	14,720	559	79.00	
1914	do	10	579	30	57.50	
1914	Free	1,242	140,032		112.81	
1915	do	121	15,912		131.50	
1916	do	158	24,643		155.96	
1917	do	17	4,104		241.41	
1918	do	2,482	510,225		205.56	
1918 [2]	do	2,399	364,936		152.53	
1919 [1]	do	13	4,290		330.00	
1920 [1]	do	1,361	76,715		56.36	
1921 [3]	do	49	3,941		80.43	

[1] Calendar year.
[2] July to Dec. 31, 1918.
[3] Six months ended June 30, 1921.

Broom corn—Domestic exports.

FISCAL YEARS.

Exported to—	1910		1911		1912	
	Tons.	Value.	Tons.	Value.	Tons.	Valu
Canada		$372,341		$292,625	2,765	$38
Australia		319		3,782		
British South Africa				285	6	
Cuba		36,542		53,650	453	5
All other		15,282		13,302	96	2
Total		424,484		363,644	3,320	46

Broom corn—Domestic exports—Continued.

FISCAL YEARS—Continued.

Exported to—	1913		1914		1915	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
anada	3,190	$285,174	2,385	$259,104	2,964	$280,688
ustralia	56	6,208	73	9,859	15	2,180
ritish South Africa	23	2,136			39	4,891
iba	686	78,029	433	49,816	661	68,949
ll other	158	17,672	68	8,647	85	11,403
Total	4,113	389,219	2,959	327,426	3,764	368,051

Exported to—	1916		1917		1918	
	Tons.	Value.	Tons.	Value.	Tons.	Value.
nada	2,791	$343,604	2,627	$549,160	3,037	$1,018,111
itish South Africa	85	11,229	22	6,183		
iba	723	83,179	505	112,261	886	256,356
l other	99	36,737	58	17,078	49	18,575
Total	3,698	454,749	3,212	684,682	3,972	1,293,042

CALENDAR YEARS.

Exported to—	1918		1919		1920	
	Tons.	Value.	Tons	Value.	Tons.	Value.
nada	3,560	$1,160,159	3,456	$730,329		
stralia			9	2,744		
ba	740	217,704	660	101,440		
ance			42	22,388		
other	43	18,485	149	42,889		
Total	4,343	1,396,348	4,316	899,790	3,917	$776,631

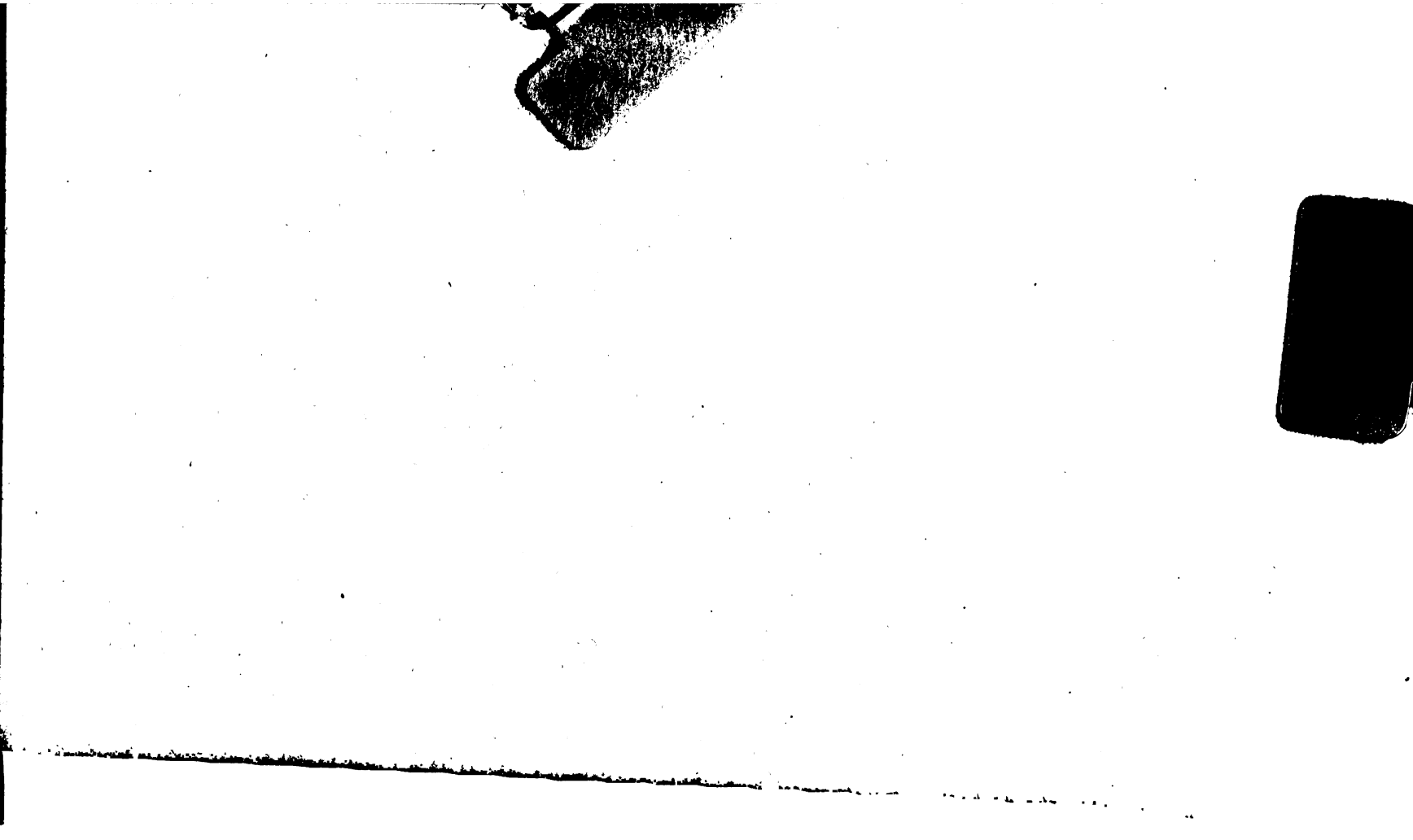
Broom corn—Farm price per ton on 15th of each month, 1910–1919.[1]

Date.	1919	1918	1917	1916	1915	1914	1913	1912	1911	1910
15	$169.41	$249.39	$184.08	$103.97	$66.26	$94.38	$48.89	$99.96	$81.46	$189.85
15	140.96	253.70	200.54	103.52	78.44	95.16	56.08	85.97	79.70	196.88
15	173.73	242.47	212.24	103.81	68.42	91.36	56.97	99.36	77.96	199.66
15	149.46	222.19	226.82	96.39	70.79	89.47	58.13	100.54	74.19	203.80
15	151.72	205.98	252.33	100.94	74.84	84.99	53.40	83.34	81.05	199.25
15	106.49	222.11	222.66	101.81	76.51	88.04	61.08	79.40	69.36	150.67
15	119.02	235.02	193.79	103.06	78.94	87.94	56.61	84.68	68.14	179.65
15	123.64	231.68	307.66	119.79	82.96	91.44	90.58	83.12	72.07	142.13
15	154.28	300.28	240.15	128.51	75.24	77.05	106.05	76.52	91.67	138.66
15	161.86	265.23	269.85	167.52	86.44	66.53	101.85	70.40	121.47	107.94
15	160.55	205.35	295.50	172.60	92.04	65.82	99.80	69.33	124.00	95.62
15	162.86	171.63	279.55	171.94	101.19	58.21	92.32	57.07	108.20	93.01

[1] Yearbook of the Department of Agriculture, 1919.

Broom corn—Rates of duty.

Tariff act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	636	Broomroot classified as dried fibers (T. D. 6215)	Free.
1890	272	Broom corn:	$8 per ton.
1894	422	----do	Free.
1897	510	----do	Do.
1909	233	----do	$3 per ton.
1913	434	----do	Free.



UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPHS 334 and 335 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

STRAW HATS

Paragraph 334:
Ramie Hat Braids

Paragraph 335:
Straw Hats, etc.

REVISED EDITION

WASHINGTON
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1921

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this, industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act, reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and Index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and index," the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Percy W. Bidwell, of the Commission's staff, and of others.

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STRAW HATS.

RAMIE HAT BRAIDS.

GENERAL INFORMATION.

1913 tariff paragraph.—334. Ramie hat braids, 40 per cent ad valorem; manufactures of ramie hat braids, 50 per cent ad valorem.

Description and uses.—Ramie braid, used for making hats, resembles silk braid, and may be made by hand or by machinery, as other hat braid.

Production.—The production of ramie hat braid is not very extensive, importers claiming that the demand for it in this country has ceased entirely. Switzerland is the chief producer, but some is made in Italy, Germany, and France. The raw material from which ramie hat braid is made comes almost wholly from China and Formosa.

Imports.—Imports of ramie hat braids or manufactures thereof are not shown by countries. Imports of hat braids amounted to $3,018 in 1914 and $150 in 1920. In 1918 they amounted to $6,475, the highest. Imports of manufactures of ramie hat braids amounted to $4,033 in 1917. In other years they have amounted to less than $1,000 with the exception of 1916, when they amounted to $1,701.

Tariff history.—The act of 1913 was the first to provide specifically for ramie hat braids. In previous tariff acts ramie hat braids were dutiable under the paragraph relating to braids composed wholly or in chief value of cotton, flax, or other vegetable fiber and not elsewhere specially provided for. Under the act of 1894 ramie braids were dutiable at 45 per cent ad valorem, under the acts of 1897 and 1909 at 60 per cent ad valorem, and under the act of 1913 at 40 per cent ad valorem.

Ramie hat braids—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.[1]	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Yards.			*Cents.*	*Per cent.*
1914	40 per cent		$3,018	$1,207		40.00
1915	do		398	159		40.00
1916	do		697	278		40.00
1917	do		841	336		40.00
1918	do		6,475	2,590		40.00
1919	do	950,000	2,255	902	.024	40.00
1920	do	7,009	150	60	2.14	40.00
MANUFACTURES OF RAMIE HAT BRAIDS.						
1914	50 per cent		$153	$76		50.00
1915	do		164	82		50.00
1916	do		1,701	850		50.00
1917	do		4,033	2,016		50.00
1918	do		338	169		50.00
1919	do	912	533	266	58.44	50.00
1920	do					

[1] Quantity not shown prior to 1919.

Ramie hat braids—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1894	263	* * * braids * * * made of cotton or other vegetable fiber * * *.	45 per cent ad valorem.
1897	339	* * * including braids * * * composed wholly or in chief value of flax, cotton, or other vegetable fiber and not elsewhere specially provided for.	60 per cent ad valorem.
1909	349	* * * braids * * * composed wholly or in chief value of cotton, flax, or other vegetable fiber * * * and not elsewhere specially provided for.	Do.
1913	334	Ramie hat braids	40 per cent ad valorem.
		manufactures of ramie hat braids	50 per cent ad valorem.

STRAW HATS AND STRAW-HAT MATERIALS.

SUMMARY.

Kinds of hats produced in the United States.—The principal business of straw-hat factories in the United States is the production of sewn-braid hats, i. e., hats made by sewing plaits or braids, of straw or other vegetable fibers, into the shape of hat bodies. Woven-body hats, rough hoods or forms woven of straw or other vegetable fibers, are also finished and trimmed in American factories. The manufacture of sewn-braid hats constitutes the bulk of the business in every large hat factory; the trimming and finishing of the woven-hat bodies is important but subsidiary.

Materials.—The principal materials used in the manufacture of sewn-braid hats are braids and plaits of straw, chip (wood shavings), and hemp. All braids are imported, chiefly from Japan (60 per cent), China, and Italy. Imports of braids for 1920 were $9,137,696, and the average for the years 1914–1920 was $7,502,457. Woven-hat bodies come from Colombia, Ecuador, and Peru, the Philippine Islands (Bangkoks and Buntals), Porto Rico, Japan (paper Panamas), Italy (Leghorns), China, and the East India Islands. The imports of hat bodies not blocked or trimmed were valued at $2,457,264 in 1920; the average for 1914–1920 was $3,772,783. The braiding of straw plait and the weaving of hat bodies are hand occupations performed by cheap labor, largely that of women and children, in the homes of the workers in foreign countries. With the exception of a small quantity of fancy braids of artificial silk and ramie fiber, neither braids nor hat bodies are at present produced in this country. Accessory materials, such as chemicals for bleaching and dyeing, cotton thread, glue, silk hatbands, leather sweatbands, and miscellaneous trimmings were imported (practically the entire supply) before the war, but all are now produced in this country.

Manufacturing processes.—The principal processes involved in the manufacture of men's sewn-braid hats are—(1) Bleaching the braid. (2) Sewing the braid. (3) Sizing or stiffening the hat bodies. (4) A sulphur bath. (5) Pressing. (6) Finishing. (7) Trimming. Women's sewn-braid hats are made in the same way, except that the braid used is generally dyed, instead of being bleached, and the women's hats are varnished after pressing. The trimming of women's hats is usually done in retail stores, although many thousand dozens of hats are sent out from the factories "ready to wear." Woven-hat bodies for both men's and women's wear are imported in the rough, and bleached or dyed, pressed and trimmed in American factories. Sewing, the most important and expensive operation in-

volved in the manufacture of sewn-braid hats, does not enter into finishing and trimming of woven-hat bodies. Hence the labor cost is less, but since bodies are more expensive than braids the material cost is considerably higher.

Production in the United States.—In 1914 straw hats to the value of $27,918,553 were produced in 149 factories, chiefly in the States of New York, Maryland, Massachusetts, and Pennsylvania. With the exception of a few large factories in small towns in Massachusetts, the industry is urban, being concentrated in New York, Baltimore, and Philadelphia. Of the total production, women's hats amount to approximately $15,500,000, or 55 per cent, and men's, boys' and children's hats to $12,500,000, or 45 per cent. Men's and women's hats are, with negligible exceptions, invariably produced in separate establishments. The materials used and the processes involved are similar, and although the styles of men's hats show more uniformity, a surprising amount of standardization has been attained in the output of large factories producing women's hats. The reason for the separation of the production of men's and women's hats into two distinct branches of the industry seems to lie in the difference in the character of the demand for the products and in the consequent difference in marketing problems. Production in both branches is seasonal. In the case of women's straw hats, the "busy" season lasts from November 1 to June 1. Velvets and felt hats are made in the summer and early fall months, but with reduced labor force.

Wage earners.—The average number of laborers employed in the straw-hat industry in 1914 was 9,483, comprising about 40 per cent men and 60 per cent women. The women who are employed in sewing the braid should be regarded as skilled laborers. A period of apprenticeship or training of one or two seasons is necessary to acquire proficiency. Added skill, resulting in considerably increased wages, is gained for several years. Operatives, who might be called partly skilled, are the men engaged in blocking, pressing and finishing hats.

Competition.—Production of women's hats in this country is on a larger scale, turning out a more standardized product, than in foreign countries. In foreign countries, straw-hat factories are principally engaged in the production of men's hats. Only women of the upper classes wear hats regularly in many foreign countries, and consequently the demand is not large enough to warrant standardized production on a large scale. The rapidity of style changes and the necessity of quick deliveries make foreign competition in the American markets impossible. A few French hats are imported every year, but these are mostly used as models.

The imports of trimmed hats are almost entirely finished hats for men's wear. In 1914, the year of the last census of manufactures, imports of finished hats amounted to $903,179, the maximum figure. In the same year the American production of men's straw hats was $12,500,000, the ratio of imports to production being 7.2 per cent. A more accurate idea of the extent of foreign competition is obtained by comparing the production of men's hats in 1914 with the average annual imports for the years 1914–1917:

Average annual imports 1914–1917	$468,025
Production of men's hats in United States in 1914	$12,500,000
Ratio of imports to production.....per cent..	3.7

Men's straw hats are imported chiefly from England and Italy. In both countries some of the processes of production are carried on in the homes of the workers. Machinery for sewing and pressing hats is used abroad to practically the same extent as in this country, but it is not so generally operated by power. Labor costs and the costs of raw materials, according to the best evidences obtainable, are lower in foreign countries. Added elements in the cost of materials for American hats are the tariff duties imposed by our law.

The war has decreased foreign competition. Foreign costs of production have risen more rapidly than domestic costs, and in addition the expenses of packing and transportation have increased. Consequently, the prices of foreign hats in the American market have shown greater advances than the prices of domestic hats. The importations from England have decreased from $374,500 in 1914 to $157,700 in 1917.

Exports.—Straw hats are exported principally to Canada, and in smaller quantities to Mexico, Cuba, and South American countries. The volume of export trade can not be accurately estimated. Men's straw hats until 1917–18 were included in the exports of manufactures of straw and palm leaf, and women's hats in artificial flowers and millinery. The value of the exports in both categories was $2,564,142 in 1917. In the same year the Canadian imports of straw hats from the United States were $1,545,583. From these statistics it seems probable that the exports of men's and women's straw hats to all countries from the United States in 1917 were about $2,000,000, approximately 7 per cent of the value of all straw hats produced in the United States in 1914.

The effect of the war has been an increase in the opportunities for the sale of American straw hats in Canada, South America, and Australia, owing to the difficulties which Italian and English manufacturers have had in securing supplies of braid and in shipping their products to export markets. Transportation difficulties have prevented the American manufacturers from taking full advantage of the increased export opportunities.

Straw hats [1]*—Summary table.*

Year.	Domestic production.	Imports for consumption.	Domestic exports.	Value (imports for consumption).	Amount of duty.
1909	$22,696,228	$2,066,768	[2] $478,001	$2,066,768	$750,907
1910		2,733,510	634,330	2,733,510	942,683
1911		2,862,448	724,850	2,862,448	994,056
1912		4,292,901	838,115	4,292,901	1,436,360
1913		4,499,261	886,661	4,499,261	1,523,464
1914	27,918,054	5,480,207	799,507	5,480,207	1,491,938
1915		4,897,485	680,492	4,897,485	1,253,990
1916		5,002,491	691,164	5,002,491	1,238,357
1917		5,095,616	1,050,842	5,095,616	1,225,667
1918		3,023,512	631,522	3,023,512	631,524
1918 [3]		[4] 2,910,040	[5] 597,184	[4] 2,910,040	600,082
1919 [3]		[4] 4,014,708	[5] 739,785	[4] 4,014,708	882,722
1920 [3]		6,157,390	[5] 1,212,025	6,157,390	1,491,186

[1] Including all hats imported, both blocked or trimmed and not blocked or trimmed.

[2] Manuactures of straw and palm leaf, including men's straw hats and also dyed straw braid, but not women's hats, which up to 1916 were not separately stated. In 1916 women's hats were classified under "Artificial flowers and millinery."

[3] Calendar year.

[4] Does not include paper hats, imitation Panamas, or manufactures of ramie hat braids.

[5] Exports of men's hats, other than felt, only.

Ratio of imports to production not computed, because not directly comparable. The figures for imports given in this table include the value of hats, not blocked or trimmed, which are used as materials in the production of the domestic hats. Ratio of exports to production not computed, because not directly comparable. Equivalent ad valorem rate not computed. Because hats, blocked or trimmed, are dutiable at a different rate from hats not blocked or trimmed.

Straw hats, not trimmed [1]*—Summary table.*

Year.	Imports for consumption.	Value (imports for consumption.)	Amount of duty.	Equivalent ad valorem rate.[4]
1910	$2,517,866	$2,517,866	$834,869	33.19
1911	2,598,066	2,598,066	861,879	33.17
1912	3,948,966	3,948,966	1,264,467	32.02
1913	4,146,925	4,146,925	1,347,309	32.49
1914	4,577,021	4,577,021	1,128,556	24.66
1915	4,266,902	4,266,902	1,001,833	23.48
1916	4,429,664	4,429,664	1,009,231	23.11
1917	4,530,092	4,530,092	1,007,210	22.23
1918	2,789,547	2,789,547	539,066	19.32
1918 [2]	[3] 2,711,943	2,711,943	529,948	19.54
1919 [2]	[3] 3,844,888	3,844,888	816,426	21.23
1920 [2]	[3] 4,770,858	4,770,858	997,286	20.90

[1] By the act of Oct. 3, 1913, the classification was changed from hats, not trimmed, to hats, not blocked or trimmed.
[2] Calendar year.
[3] Does not include paper hats, imitation Panamas.
[4] The act of Oct. 3, 1913, lowered the rate from 35 to 25 per cent ad valorem. The divergences shown in the table are due to the inclusion of Philippine and Cuban imports, dutiable at rates less than imports under the general tariff.

Straw hats, trimmed [1]*—Summary table.*

Year.	Domestic production.	Imports for consumption.	Ratio of imports to production.	Value (imports for consumption).	Amount of duty.	Equivalent ad valorem rate.[6]
			Per cent.			
1909	[2] $22,696,228	$164,206	0.007	$164,206	.....	.....
1910	.....	215,644	.....	215,644	$107,815	50.46
1911	.....	264,383	.....	264,383	132,176	50.00
1912	.....	343,935	.....	343,935	171,883	50.00
1913	.....	352,335	.....	352,335	176,156	50.00
1914	[3] 27,918,054	903,186	3.2	903,186	363,382	40.23
1915	.....	630,583	.....	630,583	252,156	40.00
1916	.....	572,827	.....	572,827	229,126	40.00
1917	.....	565,524	.....	565,524	218,457	38.63
1918	.....	233,965	.....	233,965	92,456	39.52
1918 [4]	.....	[5] 198,097	.....	198,097	70,134	35.40
1919 [4]	.....	[5] 169,820	.....	169,820	66,296	39.03
1920 [4]	.....	[5] 934,470	.....	934,470	358,252	38.34

[1] Changed to hats, blocked or trimmed, by the act of Oct. 3, 1913.
[2] Including $1,271,973 reported by concerns in allied industries.
[3] Including $2,474,553 reported by concerns in allied industries.
[4] Calendar year.
[5] Does not include paper hats, imitation Panamas.
[6] The act of Oct. 3, 1913, lowered the rate from 50 per cent to 40 per cent ad valorem. The divergences shown in this table are due to the inclusion of Philippine and Cuban goods, dutiable at rates less than imports under the general tariff.

General Information.

1913 TARIFF PARAGRAPH.

335. Braids, plaits, laces, and willow sheets of squares, composed wholly or in chief value of straw, chip, grass, palm leaf, willow, osier, rattan, real horsehair, cuba bark, or manila hemp, suitable for making or ornamenting hats, bonnets, or hoods, not bleached dyed, colored, or stained, 15 per cent ad valorem; if bleached, dyed, colored, or stained, 20 per cent ad valorem; hats, bonnets, and hoods, composed wholly or in chief of straw, chip, grass, palm leaf, willow, osier, rattan, cuba bark, or manila hemp, whether wholly or partly manufactured, but not blocked or trimmed, 25 per cent ad valorem; if blocked or trimmed, 25 per cent ad valorem; if blocked or trimmed and in chief value of such materials, 40 per cent ad valorem. But the terms "grass" and "straw" shall be understood to mean these substances in their natural form and structure, and not the separated fiber thereof.

I. DESCRIPTION.

Straw hats may be divided into two general classes according to the processes of manufacture, viz: (1) sewn-braid hats, (2) woven-body hats. In producing sewn-braid hats, straw, grass, or other similar material is first plaited into braids; then these braids are sewn together in spiral fashion along their overlapping edges into the rough shape of a hat body. In making woven-body hats, on the other hand, the straw or other material is not braided, but is woven by hand into rough hat bodies, or hoods, as they are called. The processes of blocking and trimming of both sorts of hats are essentially similar, as will appear in the subsequent discussion of the processes of manufacture.

In reply to the question, "What are the comparative advantages of sewn-braid and woven-body hats?" representative manufacturers have given the following answers:

Woven bodies are stronger and can be cleaned and bleached easier after the hat is made up. They are also cheaper.

This we believe is entirely a matter of individual taste, style, or price. The better woven hats are higher in price than braid or sewn hats.

Sewn hats are as a rule more durable. The purchase of either kind is subject to individual taste and the fashions.

Sewn-braid hats require gluing and will not stand rain. Woven-body hats are more serviceable in all kinds of weather, fit snugly, shed rain, etc.

The sewn hat seems to have the preference over the woven-body of any description by the women. This may be caused by the fact that we can make much more intricate shapes and better looking hats for no more money.

Most of the braid hats are more durable. Woven-body hats are generally lighter in weight and lend themselves to blocking in fancy shapes, as for instance, Alpine, telescope shapes, etc.

Practically all large manufacturers of either men's or women's hats produce woven body as well as sewn-braid hats, the bulk of the business being almost always found in the production of the former variety. The finishing and trimming of woven bodies is subsidiary, amounting usually to about 20 per cent, although sometimes as high as 40 per cent of the total business done in each factory. Thus the large manufacturers by being prepared to supply either kind of hats, insure themselves against sudden changes of fashion. The "body" business seems to have more flexibility than the manufacture of sewn-braid hats. Rough hoods or bodies can be blocked and finished in a wide variety of shapes. They also required less expenditure of labor and consequently the output can be varied more easily than in the case of sewn-braid hats. Small manufacturers do not generally devote as much attention, proportionally, to the trimming and finishing of woven-hat bodies as do the large firms, because of the larger investment of capital required in purchasing the imported hat bodies in the rough.

There are many kinds of both sewn-braid and woven-body hats, depending (1) on the kind of material of which they are composed, i. e., whether straw, palm, leaf, wooden chip, manila hemp, rush, grass, etc.; (2) on how this material is braided or woven; (3) on the shape which is finally given the hat in the processes of blocking and pressing; and (4) on the kind and quality of trimming used. Men's hats, like other articles of their wearing apparel, show more tendency to standardization than those made for women's wear. Most of the men's hats are made in a few uniform shapes such as (1) the yachting

or "sailor" type, with a flat crown and stiff brim; (2) a similar shape with a higher crown and flexible brim worn by older men; and (3) the Alpine or Fedora style, in which the Panamas are usually seen. Yet the extent of standardization is not nearly so great as appears, for within each class or style of men's hats there are not only 11 different sizes, but there are also a great number of varieties, depending on the height of the crown, the width of the brim, the kind of straw braid or woven body used, and the quality and style of trimming used. The number of possible combinations of those variations is so large that some large manufacturers are prepared to take orders for as many as 2,000 different kinds of men's hats.

Great variety is to be expected in women's hats, but even here an approach to standardization in shapes is discoverable. Each of the large manufacturers offers at the beginning of the season a few shapes as samples and then produces these hats on orders. Popular shapes are produced in hundreds of dozens. All women's hats are of the same size.[1] The variety observed in women's straw hats is largely, therefore, the result of the details of the trimmings which are added in the millinery shops and stores.

II. MATERIALS USED AND PRINCIPAL SOURCES OF SUPPLY.

A. SEWN-BRAID HATS.

The principal materials used in the manufacture of straw sewn-braid hats are braids or plaits of straw, chip, grass, and other vegetable fibers. Accessory materials are chemicals for bleaching and dyeing, cotton thread used in sewing the braid, glue or gelatin for sizing, and miscellaneous materials for trimming.

1. *Braids for men's hats.*—The straw braids most used at present for men's hats are plaited in Japan and in China. From Japan come large quantities of braid known as sennit, which is almost exclusively used in the production of stiff-brimmed sailors or yachting hats. The sennit braid is made of wheat straw, harvested before the grain is ripe. The straw, which grows about 30 inches high, is divided into three cuttings of 8 to 10 inches in length. Of these the first and second, counting from the top, make the best quality of braid. The short lengths of straw are plaited together and spliced at the ends, making a continuous piece. The "piece," the unit of measurement used by importers as well as by manufacturers, is generally estimated at 60 yards in length, although some braid is sold in pieces of 120 yards.

Sennit braids may be of any width from 6 to 22 millimeters; widths of 11 to 18 millimeters are at present most in demand. The details of appearance and finish of braid depend upon the process of plaiting, i. e., whether whole or split is used, and upon the number of strands or "ends" of which the braid is composed (e. g. whether 3, 5, or 7 ends).

Chinese braids are narrower than the Japanese, varying from 5 to 11 millimeters in width. They lack the clear, pale yellow color of the Japanese straw, and since the business of plaiting braid is not systematically organized in China, the quality of workmanship is more apt to be inferior. The Chinese braid principally used by

[1] That is, all hats of any particular shape.

American manufacturers of men's hats is the 7-end split, composed, as the name suggests, of seven strands of split straw. Other braids are the shansi, also called shingkee or Mashenpoo, a 7-end braid of whole straw, and Laichow mottled, also known as patent Milan. The latter is of low grade both in color and in workmanship. Shingkee and patent Milan are used in the cheapest variety of sewn-braid hats, "coarse" and "coarse fine," for men and boys.

2. *Braids for women's hats.*—For women's hats, braids of three materials are principally used; straw, hemp, and chip (i. e. wood shavings). The best straw braid is the Italian Milan, imported in normal years in large quantities. It is manufactured from straw grown in Tuscany. "Generations of Tuscan women have braided straw and seem to do the work mechanically. They are wonderfully deft, never looking at the strands, braiding while talking or walking or while carrying bundles upon their heads. Braid making furnishes an occupation to thousands of women and girls and is a home industry, to be taken up or put down as circumstances require. * * * The work is paid for by the piece, and earnings range from $0.08 to $0.40 per day, the latter amount being for the most expert workers." [1]

The war conditions seem to have unfavorably affected the quality of Italian braids. "With the increased demand and the scarcity of labor, the goods shipped have not always been up to standard. Many of the most skillful braiders, who are always women, left their work for more lucrative work offered by contractors for army supplies; others to work on small farms from which men had been called to the colors. This, together with the pressure put on workers by the 'fattorini,' in order to turn out sufficient work to supply the increased demand, and the fact that numbers of unskilled women and children had to be employed, necessarily affected the quality of the work. Upon the offer of better wages many women returned from Government work, but throughout the season hands were scarce." [2]

Italy also bleached and exported, before the war, considerable quantities of Japanese and Chinese straw braids. Transportation difficulties have decreased this business, but reexports of Swiss braids are still an important item.

Chinese straw braids known as piping and 7-end split are of good quality and are much used in women's hats. From China is imported also a braid known as patent Milan which, as the name implies, is an imitation of the high-grade Italian product. A 2-end straw braid for women's hats is imported from Japan.

Hemp braids have been in recent years a very popular material for women's hats. The bulk of the United States supply has come from Japan, amounting in 1919 to 4,563,000 bundles, worth $837,000. Italy also supplies hemp braid, the raw material for which originates in the Philippine Islands.

The cheapest braid used in women's hats is known as chip. The material used is not straw but wood shavings, although it is sometimes known as rice straw. The method of preparing this material is described by a United States consul in Italy.

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[1] United States Commerce Reports, Feb. 4, 1916.
[2] Supplement to United States Commerce Reports, Annual Series, May 17, 1916.

"Truciolo" straw is made into braids at Carpi, a town near Modena, in this consular district. These braids are employed for "chip" hats. The material used is not straw at all, although it is sometimes known as "rice straw." Great numbers of white poplar trees are grown in the river Po region in the Province of Reggio Emilia and Ferrara, especially for the manufacture of this "straw." Four or five years after planting the trees are felled. All straight trunks and branches are cut into lengths of 20 to 24 inches, the bark removed, the piece squared and planed. The pieces are then passed through a special machine that cuts them into strands of any desired width and thickness. Three of these strands are used to plait a braid. The braids can be colored or bleached to any desired shade.[1]

A hat of chip braid when lacquered closely resembles the more expensive straw hat, but its wearing quality is much inferior. Chip braid is also imported from Japan in large quantities.

Besides the staple braids described above, small quantities of fancy braids are imported, of materials such as horse hair, artificial silk, and ramie fibers. Fancy braids can not usually be sewn on machines; consequently they are not suitable for the production of standardized hats in large quantities.

3. *Imports of braids.*—The total imports of braids in 1920[3] were valued at $16,340,585. Of this amount Japan supplied braid valued at $6,104,343; China, $8,379,819; Italy, $1,118,779; France, $60,547; and England, $369,766. Japan's importance as a source of braids has increased remarkably since the outbreak of the present war. The United States consul, Kobe, Japan, recently reported:

The manufacture of hats and hat braids was an important industry in this district even before the war, but since supplies from Italy, which was Japan's principal competitor, were cut off, the output here has increased enormously.[2]

The above report is substantiated by an examination of the figures for imports for 1916 and 1917. The value of Japanese braids imported increased from $3,315,000 in 1916 to $6,104,343 in 1920[3]; the imports from Italy decreased from $1,017,000 in 1916 to $672,000 in 1917, but in 1920 were $1,118,779. Considering the statistics over the six-year period, 1912–1917, we get more dependable results. For the three years preceding July 1, 1914, Japan supplied 44 per cent of the braids imported into the United States; in the three years succeeding, the proportion was 60 per cent. The value of imports from China and Italy have increased both absolutely and relatively since 1914, whereas the share of England and France in the trade has shown considerable decrease.

4. *Hat braids not produced in the United States.*—With the exception of a small quantity of fancy braids, none of such material for the manufacture of either men's or women's straw hats is at present produced in the United States. A manufacturer has written on this subject as follows:

A few of the Indians in the vicinity of the Mackinaw Straits, plaited some braid which was called Genuine Mackinaw. The production was never large, and was very uneven and irregular both in quality and widths, so that the handling of the braid was more or less of a problem. Somebody from America or Japan got hold of a piece of this braid and plaited an imitation in Japan, which was regular and very much lower in price, and in a very short while stopped entirely the small production of the Genuine Mackinaw braid.

The plaiting of straw braids was long a household industry of importance in small Massachusetts towns, but has now entirely disappeared.

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[1] U. S. Commerce Reports, Feb. 4, 1916.
[2] Supplement to United States Commerce Reports, Annual Series, No. 55 c., Dec. 31, 1917.
[3] Calendar year.

B. WOVEN BODY HATS.

The finishing and trimming of woven hat bodies constitutes a part of the business of all large straw-hat factories. Hat bodies are always imported "in the rough," i. e., not blocked or trimmed, and consequently should be regarded as a semimanufactured material. The entire supply of hat bodies is at present brought in from foreign countries, where the weaving is a household industry requiring a high degree of skill. The domestic industry of weaving palm-leaf hats, which, like the plaiting of straw braid, was formerly a household industry in rural sections, has now entirely disappeared. The principal sources of supply are South America, the Philippine Islands, Japan, Italy, and the West Indies. In 1920 of the total imports of hats, not blocked or trimmed, amounted to $3,261,981.[1] Colombia, Ecuador, and Peru supplied $1,372,326; Japan, $34,232; and the Philippine Islands, $583,256. Taking an average of the annual imports since 1915, however, we find Japanese goods more than twice as important as those received from the Philippines. The latter have shown an increase in value of from less than $260,000 in 1915 to over $580,000 in 1920.[1]

1. *Panama hats.*—From Colombia, Ecuador, and Peru we get the hats known as Panamas. The name at present, is misleading, because very few of these hats are produced on the Isthmus. It was attached to the product because Panama was the point of transshipment for all goods from the west coast of South America. Two other names, Toquilla and Jipijapa, are given to the hats. The former refers to the palm tree which supplies the fiber from which the hats are made; and the latter refers to a town in Ecuador, whose inhabitants are largely engaged in weaving the hats.

The production of Panama hats is a household industry carried on by thousands of families in the interior of the three Republics. The "straw" which furnishes the material is taken from the leaves of a palm tree (*Carludovica palmata*) which grows in the tropical and damp zone of Colombia, in the forests of Peru, and on the banks of the Amazon River. The Ecuadorian plants, however, furnish the highest quality of straw, used by producers in both Colombia and Peru. A considerable amount of careful preparation is required before the straw is ready for weaving. The leaves are cut from the trunk of the tree before they open, or just as they ripen, are soaked in hot water, and then bleached by drying in the sun. Weaving, a hand process entirely, is done in the early morning and in the late evening, when the moisture in the air keeps the fiber pliable. The native women and children become the most successful hat weavers, although men are sometimes found with sufficient deftness of fingers to be successful in the art. To weave a hat of fine quality may require from three to six months, working from four to five hours daily. Such hats are sold in foreign retail markets at prices varying from $25 to $100 each. The Panama hats which sell in retail stores in the United States at $5 each are bought in South America at about $24 a dozen. Hats similar to the genuine Panama are imported from Jamaica, Curacao, and other islands in the West Indies.

[1] Calendar year.

2. *Japanese Panamas.*—A cheap imitation of the Panama hat is imported from Japan. The material is paper made from a pulp of vegetable fiber. The paper is cut into fine strips, which are braided by hand. The Japanese hats, called Toyos or Adambas, closely resemble the South American products in appearance, but are heavier and do not stand the weather as well. They sell at a much lower price than the genuine Panamas, consequently the importation has increased rapidly in late years. The Japanese statistics show an exportation of 162,200 dozen of imitation Panama hats to the United States in 1913, 260,000 dozen in 1914, and 200,000 dozen in 1915.[1] In 1916 the value of the exports of these hats to the United States was $2,090,000,[2] by 1918 the value had fallen to $639,209.

3. *Philippine hats.*[4]—The weaving of straw hats is one of the many important household industries in the Philippine Islands. Of the many kinds of hats produced there, the varieties chiefly exported to the United States are: Bamboo hats, sold in this country as Java or Manila hats. They are easily produced and sold at a low price, but are not so durable as other varieties. Exports to the United States in 1916, 256,000, value, $103,200; in 1919, 43,642 with a value of $70,582.

Buri and Arayat hats, made of the fiber of the leaves of the buri palm, are very cheap hats, being worn in this country in the harvest fields and at the seashore. Exports to the United States in 1916, 729,200, value, $34,250; but fell off in 1919 to 45,112 worth $10,830.

Buntal hats, called also Bangkok or East Indian Panamas, are made from the fiber of the leaf stem of the buri palm. They are of a beautiful silky texture, light straw in color, weigh very little, and are durable. "The export demand for buntal hats is greater than the supply, and all that can be obtained from Manila are shipped abroad, mostly to Paris and New York. These hats have long been used in the United States, but direct import has grown to large proportions only since the advent of free trade, the hats having been brought in from Paris previous to that time. Buntal hats are very popular in the United States, and a growing market may be relied upon there." [3] The buntal hats are the most expensive of the Philippine product, retailing in this country from $10 upward. Exports to the United States in 1916, 317,200, value, $440,750; and 350,721 with a valne of $574,849 in 1919.

4. *Leghorn hats.*—The Leghorn hats imported from Italy have long been famous. They are not, strictly speaking, woven-body hats, being constructed of narrow straw braids sewn edge to edge instead of overlapping as in the standard sewn braid hats. Straw, instead of thread, is used in sewing. Chip hats, woven hat bodies made of wood shavings, are also imported from Italy. Since the imports of untrimmed hats are not segregated in the official statistics of importation by countries, it is impossible to give exact figures for the imports of woven hat bodies from Italy. The United States consul at Florence, the chief port of exportation, reported that shipments of unblocked hats from that district had decreased from 162,200 dozen,

[1] Japan. Department of Finance. Annual Return of Foreign Trade, 1915. Pt. I, pp. 288–289.
[2] Supplement to the United States Commerce Reports, Annual Series No. 55c. Dec. 31, 1917.
[3] Miller, Hugo H. Philippine Hats, Bulletin No. 33 of the Bureau of Education. Manila, 1910, pp 37–38.
[4] Figures for the exports of Philippine hats are taken from the Annual Reports of the Bureau of Customs Department of Finance, Government of the Philippine Islands. 1916, pp. 211–213, and 1919, pp 227–228.

valued at $917,500 in 1916, to 73,500 dozen, valued at $374,400, in 1917.[1]

5. *Other hats.*—From Porto Rico the imports of manufactures of straw and palm leaf, consisting chiefly of woven-body hats, steadily increased from 1910, to the year 1917 with a total of $569,400. Since that there has been a large decrease, in 1920 (calendar year) the total value was $131,952. Concerning the industry in Porto Rico, a special agent of the Department of Commerce has written:

> The hat-weaving industry is one of the most important in Porto Rico, and it affords employment to a great many people. It centers in the eastern end of the island, where the air is charged with moisture and one finds the greatest abundance of the palms from which the material for the hats is secured. The work is done mainly in the homes by women and girls, and occasionally some old men. The hats are bought by traveling traders, who then market them to the dealers either for export or for blocking and local wear. So large has the demand become for Porto Rican straw hats that the supply of palm leaves is not sufficient, and quantities of the prepared leaves are imported from the Dominican Republic. The Carludovica palm, out of which the Panama hats of Colombia, Venezuela, and Ecuador are woven, grows well on the eastern end of the island. The authorities are contemplating the purchase of seed of the Carludovica for free distribution and to plant on public lands, in order to supply the fibers for making the Panama style of hat in addition to the typical Porto Rican hat.[2]

Imports of woven hat bodies from China have shown rapid increase from 53,400 dozen, valued at $7,400 in 1914 to 203,600 dozen, valued at $70,800 in 1916.[3] In 1919 the total was 207,809 dozen with a value of $37,087. Most of these—80 to 85 per cent—were of a coarse fiber, known as rush hats.

Coarse palm leaf hat bodies for harvest hats are imported from Spain (Malagas) and from Mexico. Penits and other grass and rush hats come from China and the East Indies. Considerable quantities of bamboo hats are imported from Java.

C. ACCESSORY MATERIALS.

The accessory materials used in the manufacture of straw hats were, before the war, almost entirely imported. Bleaching and dyeing materials came from Germany, glue for sizing from France, and silk hat bands from Germany and Italy. When imported leathers were used, they came from Belgium and England. The tips or linings were made from satin produced in this country or in France, and the lace came from England. At present practically all the accessory materials are of domestic production. The American materials are higher in price and in some cases of unsatisfactory quality.

III. PROCESS OF MANUFACTURE.

A. SEWN BRAID HATS.

Bleaching and dyeing.—All the large factories have bleaching departments, and in the case of factories producing women's hats, dyeing plants as well. In bleaching, the braid is immersed in rectangular wooden vats, which contain chemical solutions kept at high temperatures (ca. 170° F.) by steam heat. The process for each lot of braid, including several different kinds of baths, requires from one to two weeks, depending on the kind of braid and the sort

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[1] United States Commerce Reports, Feb. 6, 1918.
[2] Harris, Garrard: The West Indies as an Export Field. United States Department of Commerce Special Agents Series, No. 141, (1917), p. 254.
[3] China. Maritime Customs; Return of Trade and Trade Reports (1917), Part III; Analysis of Foreign Trade. Vol. II. Exports. pp. 761-763.

of finish desired. The bleaching agents most commonly used before the present war were blankit, a German secret process product, oxalic acid, and peroxides of sodium and hydrogen. Since 1914 zinc dust and bisulphite of soda have been substituted for blankit, and hydrofluoric acid and sulphuric acid for oxalic acid. None of these substitutes have proved satisfactory.

After removal from the vats, an operation accomplished in some of the larger factories by specially designed machinery, the braid is dried in a room furnished with artificial heat, either on a belt conveyor or with the aid of ventilating machinery.

The braid for women's hats is generally dyed instead of being bleached, colored straw hats of all shades being at present more in demand than white "sailors." The dyeing process is similar to that used in textile factories.

Sewing.—After drying, a process requiring one or two hours, the braid is sorted and graded and made up in lots ready for the sewing room. Braid hats are sewed entirely by machine. The sewing machines are power driven and run at a high rate of speed. They are arranged in rows above a shaft, the treadle controlling the starting and stopping device, while a lever operated by the operator's knee lifts and lowers the needle bar. Thus the operator's hands are free to handle the body of the hat and the braid as it unwinds from large spools near by. A small "button," which forms the center of the crown, is used as the starting point, the braid being sewed around and around until the crown is finished, conforming in height and diameter to a model or block set before each operator. The brims, sewed separately and afterwards joined to the crown by other workers, are in sailor hats double. Women's hats of intricate patterns are also made in two pieces.

Sizing—This process consists of stiffening or giving body to the hat. It is accomplished by either one of two methods. Dipping in a hot solution of glue is the simpler process. When stiff hats are desired, such as men's yachting hats and women's sailors, the size is given by dipping. Slop sizing is a combination of the processes of sizing and blocking. The hat body is fitted over the original plaster model used in the sewing room, and the glue, a thin solution, is slopped on with a sponge until the straw has been thoroughly permeated. All women's hats, with the exception of the sailors, are sized in this manner, and also men's hats of flexible brims and crowns.

The sulphur bath.—The glue left on the hat in the process of sizing damages the color of the straw, and hence all hats, except those of dyed braid, are put in a hermetically sealed room and thoroughly fumigated with sulphur in order to restore the original clear straw color. This process requires several hours and is generally carried on overnight.

Pressing.—Pressing is a machine process which gives permanent shape to the hat bodies. After being softened by steam, the hat body is placed in a hydraulic press. The die or form which is used in pressing is cast of spelter from the original plaster model used in the sewing room. The press is heated with steam or gas flames. The hat body is retained in the press for several minutes at a pressure of from 100 to 200 pounds to the square inch.

Finishing.—Finishing is a hand process applied to only the finest grades of men's hats. The hat is placed on a block and covered with

a damp cloth. An electrically heated iron is used to smooth out all irregularities and give a fine, glossy finish to the surface of the hat.

Varnishing.—Women's hats of dyed braid, and also woven body hats which have been dyed, are given a coat of varnish or lacquer after pressing. The varnish is usually applied by hand with brushes, but in some factories it is sprayed on by compressed air.

Trimming.—Trimming, in the case of men's hats, consists in sewing the leather sweatband, the net lining, and the satin "tip" into the inside of the hat and fastening the black silk band around the outside of the crown. This process is invariably done by women. Machines are used in trimming the cheaper grades of men's, boys', and children's hats. Most women's hats produced in large factories, i. e., the medium and low priced hats, are sold to the jobber untrimmed. A few women's sailor hats are trimmed in the same fashion as men's hats and in addition a considerable quantity of "ready-to-wear" hats, varying from year to year according to the changes of fashion, are trimmed with plain sashes and ornaments.

Women's hats are inspected after pressing and the shapes which have been damaged in handling are either steamed and pressed or thrown out. Men's hats are inspected and graded after trimming. The final processes in both cases consists in packing the finished hats in paper boxes (the so-called bandboxes), and then in either wooden cases or in the corrugated paper cartons which in later years have been largely substituted.

B. WOVEN-BODY HATS.

The bleaching, dyeing, pressing, finishing, and trimming of woven hat bodies are processes similar to those performed upon sewn-braid hats, described above. Some of the processes, however, are omitted in the case of woven hat bodies. Panama and Leghorn hats, for instance, do not require bleaching. Sizing, also, is a process generally omitted. The important operation of sewing braid is of course entirely eliminated. Hence the labor cost involved in finishing and trimming woven hat bodies is considerably less than that of manufacturing sewn-braid hats. On the other hand, hat bodies are more expensive than straw braid, and hence the materials make up a larger proportion of total manufacturing costs in the case of woven-body hats. The cheapest grades, the so-called harvest hats, are neither bleached, dyed, nor sized. After being softened with steam they are given a permanent shape in hydraulic presses. The brims are trimmed and the raw edges bound by machinery. Sewing machines operating at high speed attach the inside lining and the outer band at the same operation, and the hat is then completed. Such hats are turned out by the thousands of dozens yearly in a few large factories in this country.

IV. DIVISIONS IN THE INDUSTRY.

The total production of straw hats in the United States in 1914, the latest date for which official statistics are available, amounted to about $28,000,000.[1] No distinction was made in the published census returns between men's and women's hats, but an examination of the original schedules shows that the total output was rather

[1] Including $2,475,000 produced in establishments among the other industries.

evenly divided between the two branches of the industry. The value of men's hats amounted to approximately $12,500,000, or 45 per cent of the total production, and women's hats amounted to $15,500,000, or 55 per cent.

The same statistics show that men's hats are usually produced on a larger scale than women's. The total production of shops doing an annual business of $50,000 and over (men's and women's hats) was $20,440,000. Of this amount the value of men's hats was 60 per cent. The smaller shops, those having an annual output of less than $50,000, are either millinery establishments or shops for blocking and trimming Panama and other woven-body hats.

A. MEN'S HATS.

Of men's hats there are two well-recognized divisions: (1) Men's fine hats, including hats selling at wholesale from $9 to $24 per dozen, are mostly sewn-braid hats. Hats of the more expensive braids sell as high as $36 a dozen. The high-grade Panama and Philippine woven hats are considerably more expensive. The hats of this description sell in retail stores at prices ranging from $1.50 to $6 each; and (2) "Medium and low priced goods" consist of men's, boys' and children's hats wholesaling from $1.75 to $6 per dozen. In this class there is included a small quantity of sewn-braid hats made of the cheapest straw braids, but the larger proportion are the coarse woven bodies which, when pressed and trimmed, are sold as "harvest hats." These retail at from 25 cents to $1 each.

Both classes of men's hats are produced on a large scale in well-equipped factories using modern machinery. The output of the representative factories varies from 50,000 to 100,000 dozen hats per year. Some of the firms specializing in "harvest hats" turn out from 150,000 to 200,000 dozen hats annually. The census returns of 1914 showed eight establishments engaged in the production of men's straw hats, with an annual output of over $500,000 each. The total output of these eight firms, which may be distinguished as leaders in the industry, was valued at $7,000,000, or 56 per cent of the entire American production of men's hats. There were 19 other firms which may be regarded as substantial factors in the industry whose output varied from $100,000 to $500,000.

B. WOMEN'S HATS.

Among the firms producing women's straw hats four groups may be distinguished:

(1) Millinery shops which make and trim high-priced hats in small quantities and in individual styles.

(2) Factories turning out medium and low priced untrimmed hats in large quantities. Such hats wholesale at from $8.50 to $30 per dozen, the bulk of them selling at $15 or $18. A few of the largest of these manufacturers in eastern Massachusetts make from 50,000 to 125,000 dozen of such hats yearly. These might be called the staple goods of the women's straw-hat trade.

(3) Factories producing "specialties," new hats of unique shapes, made of fancy braids, selling at a somewhat higher price than the staple goods, viz, $24 to $36 per dozen.

(4) "Kikes." This term is applied to a fluctuating element in the women's hat business which has become of considerable importance in the last 10 or 12 years. The "kikes" are small manufacturers, having no permanent place of business, who carry on the production of hats in rented lofts in large cities such as New York, Chicago, and Boston. Such manufacturers originate no styles of their own, but offer to duplicate at low prices the shapes put out by large factories which have already proved popular. Capital for investment in machinery is borrowed, and braid is secured from importers on credit. The manufacturer and his friends and relatives compose the labor force. In order to rush production, avoiding the restrictions on hours of labor of women imposed by the State laws and in late years by labor organizations, men are generally used for the important operation of sewing the braid. On account of the haste in which the work is done the hats produced in such shops are necessarily of inferior quality, although closely resembling in style and superficial appearance the more expensive hats of which they are copies. Although a few of these manufacturers make large profits and become permanently established in the business, most of them do not succeed, and the percentage of failures is annually large.

The competition of "kikes" has been seriously felt by the large factories in recent years, and the market for women's hats has been somewhat disorganized as a result. In consequence of the keen competition in the production of cheap grades of hats, the larger factories have tended to devote their attention to the production of better grades of hats at higher prices. The tendency is shown by the decrease in the quantity of hats produced in several large establishments in the last two or three years without, however, a corresponding decrease in the value of their annual output.

Practically all of the factories engaged in making women's straw hats also make trimmed hats for fall and winter wear of velvet, satin, and felt. Straw hats, however, are always the main product. By making a subsidiary product of other materials it is possible to utilize a part of the factories' labor force and plant during the summer and early fall.

The census schedules filed by manufacturers in 1914 show 35 or 40 firms making women's hats, whose business amounted to over $50,000 yearly. Of these, 5 establishments had an annual production of over $500,000, and 7 others ranged from $300,000 to $500,000. The business of the 12 leading firms was $5,300,000, or about 35 per cent of the total value of women's hats produced in this country.

C. REASONS WHY WOMEN'S AND MEN'S HATS ARE MADE IN SEPARATE ESTABLISHMENTS.

Women's and men's straw hats are almost invariably produced in separate establishments and should be regarded as representing different branches of the industry. Both branches use the same materials, for although the braids of which women's hats are composed show more variety in material and in style of plaiting, yet they are imported from the same countries as braids used in men's hats and fall under the same tariff classification.[1] The same is true of woven hat bodies.

[1] Ramie fiber braids, of which the importations amounted in 1917 to $4,000, are an exception to this statement.

Other materials, with the exception of trimmings, are identical. The same sewing machines and processes are used in both sorts of factories; the labor force operating these machines could easily adapt itself to the production of either variety of hats. Although the firms making women's hats in general operate on a smaller scale, yet the representative or leading firms are not much inferior in the amount of capital invested or in the value of their annual output to corresponding firms in the men's trade.

The explanation of the separation of these businesses in spite of many "communities of interest" seems to lie in differences in the character of the demand for their products. Their production problems are similar, but their selling problems are different. The distinctive characteristics of the demand for women's hats are: (1) The great variety of styles which are wanted. No woman wants a hat exactly like her neighbor's, whereas, men show a tendency to uniformity in headgear as well as in other articles of dress. (2) The suddenness of changes in styles. In men's hats a considerable standardization of shapes and trimmings has been attained, and the standard styles remain fairly constant from year to year. Retailers can carry over their stocks of men's straw hats which remain unsold, with a fair chance of getting rid of them in the following season. It would be almost impossible to sell women's hats except in the same season in which they are produced. Because of the risk of changing styles, women's hats must be produced and delivered within a short time after the date of ordering. This period may be as long as 30 days for sample orders at the beginning of the season, but it shortens to a week or 10 days at the height of the busy period in the spring. In the case of men's hats, six or seven months may elapse between the receipt of the order and the delivery of the goods.

The consequence of these characteristics of demand is that in making women's hats attention must be concentrated on the development and production of fashionable styles. The ability to predict in advance the fluctuations in fashion is a large element in the successful management of a women's hat factory.

There is great seasonal fluctuation in the production of both women's and men's straw hats, but nothing would be gained in this respect by the combination of the two varieties in the same establishment. The busy season in the men's hat trade, although somewhat more extended, covers the same months as the season of greatest production of women's hats. Consequently, the varieties would conflict rather than supplement each.

V. SEASONAL CHARACTER OF THE STRAW-HAT INDUSTRY.

The season of production in the case of women's straw hats extends from about the middle of November until May 1. Production on early orders begins early in November, but the factories are not generally working up to normal capacity until December 1. The so-called "regular" season comes to a climax and ends at Easter time, or about April 15. The "summer" season, or "after" season, extending from Easter to about June 1, in which sport hats and novelties for summer wear are made, has of late years become of increasing importance.

No women's straw hats are produced between June 1 and November 1. Consequently, the sewing machines in hat factories, which are

used only on straw hats, are idle during the summer months.[1] The women and girls who operate these machines must then find some other employment. In the case of large Massachusetts factories, the operatives return to their homes in New England country towns. Many of them are employed as waitresses in summer hotels. Employees of city millinery shops find it more difficult to get work during the dull season. This fact is perhaps one of the advantages determining the location of the largest women's straw-hat factories in New England villages.

Men's hats are produced through a longer season. Salesmen go out during the last of July or early in August to take orders for the following season. Production begins on these orders as fast as they come in, and the factories are usually running at normal capacity about November 1. Shipments are made on original orders in February and March to the Southern States and in March and April to northern dealers. Production on duplicate orders generally keeps the plants busy up to July 1. They are generally practically idle for a full month in the middle of the summer, only a small part of the labor force being retained to make repairs, etc.

VI. MARKETING METHODS.

[illegible] women's hats are sold through jobbers and wholesalers. The cheaper hats (those designed for the country trade (i. e., for sale in small towns and villages)) are marketed by this method exclusively. The higher grades of hats are sold by either of two methods: (1) through jobbers and wholesalers, (2) directly from factories [illegible] the growth of the millinery business done by large [illegible] stores the second method has increased in importance. [illegible] almost one-half of the city trade is supplied directly from [illegible]

[illegible] similar situation exists in the men's hat trade. Men's [illegible] those wholesaling from $9 to $24 a dozen, are now [illegible] directly to retailers. Even the imported hats are to [illegible] retailers in this country by representatives of [illegible] manufacturers. This statement, of course, refers only to [illegible] the largest buyers such as department stores and [illegible] men's furnishings. Foreign hats are distrib- [illegible] through importing wholesalers. Medium [illegible] domestic manufacture are usually marketed [illegible] commission basis. The method, how- [illegible] are being made by [illegible] directly with the retailers.

[illegible] FORCE

[illegible] has already been shown, is [illegible] fluctua- [illegible] The census sta- [illegible] wage earners em- [illegible] in the busi- [illegible] month of [illegible] February to [illegible]

[1] [illegible] The [illegible]

In typical months of the busy season, the men compose about 40 per cent of the labor force, but the proportion varies considerably in the summer months. Men in general are more constantly employed than women. Repairers, firemen, watchmen, etc., are kept busy in all seasons. Men engaged in pressing, flanging, and in packing in women's factories are transferred from the straw to the felt hats in the slack season. The operation of sewing straw braid, on the other hand, employs women exclusively, and in the slack season of straw-hat production they have no work.

Skilled labor.—Operations requiring skilled labor are sewing, blocking, pressing, finishing, and trimming. The first and last of these are always performed by women. Sewing is the most skilled operation, at least one season being required before normal proficiency can be attained. A second season generally adds considerably to an operator's skill. A number of new girls are taken into the factories every fall as learners and are paid day wages until they have acquired enough skill to earn more at a piece-work rate. Blocking, pressing, and finishing are men's occupations, which are paid at piece-work rates. Reasonable proficiency can be acquired in any of these processes in a few months. According to estimates furnished by representative manufacturers, the proportion of laborers who might be called skilled is about 75 to 80 per cent of the entire number of wage earners employed.

VIII. EXPORT TRADE.

Although American manufacturers have shown little interest in selling to foreign countries, the total volume of export trade has been considerable, amounting to from 5 to 7 per cent of the total domestic production. Canada is the chief market; others of less importance are Cuba, Mexico, Panama, Colombia, and Argentina.

The statistics of American exports of straw hats do not give a clear impression, either of the amount of the trade or of its tendencies in recent years. The principal class under which straw hats are exported is "Manufactures of straw and palm leaf," comprising men's hats, and bleached and dyed straw braid, as well. Prior to July 1, 1917, women's straw hats were not separately classified, being returned under "All other articles." A separate class entitled "Artificial flowers and millinery" was made in the statistics for 1917, comprising, among other articles, the women's straw hats exported in that year. The value of the exports of this class was $1,513,300.[1]

The following table shows the exports of manufactures of straw and palm leaf to the principal countries in the years 1910–1920:

Year.	Canada.	Latin-American countries.	All other.	Total.
1910	$460,986	$111,396	$52,948	$634,330
1911	553,789	103,866	67,195	724,850
1912	642,908	117,267	78,480	838,115
1913	705,125	94,646	88,890	886,661
1914	651,085	49,508	98,816	799,507
1915	508,899	64,620	108,973	680,492
1916	414,978	169,433	106,753	691,164
1917	510,594	368,194	172,054	1,050,842
1918[2]	164,216	663,247	22,246	849,709
1919[2]	264,263	565,171	95,996	926,430
1920[2]	217,087	1,198,116	187,738	1,602,941

[1] A new classification of commodities exported, approved May 25, 1917, does not assist in obtaining more accurate information regarding the exports of straw hats. The new classification is as follows: Hats and materials for: For men and boys: felt; all other. For women and children: untrimmed; trimmed.

[2] Calendar years.

The average annual exports for the three war years, 1915–1917, were $807,500, showing an increase of 7.5 per cent over the annual average for the five prewar years, $750,000.[1]

The exports to Canada, according to the above table, show a decreasing tendency, the average per year being $477,500, 1915–1917, and $605,900 for the years 1910–1914. But the Canadian statistics of imports of straw hats from the United States give an entirely different impression.

CANADIAN IMPORTS OF STRAW HATS FROM THE UNITED STATES.[2]

1910	$580,150	1916	$1,092,891
1911	662,323	1917	1,545,583
1912	872,774	1918	1,695,307
1913	1,185,874	1919	1,842,950
1914	1,164,072	1920	1,083,426
1915	1,129,878		

The difference between the American and Canadian statistics, amounting in 1917 to roughly $1,000,000, represents the value of women's straw hats exported from the United States as millinery.[3]

The Latin-American trade, while of small importance as compared with the Canadian, has shown tendency to increase since 1914. The exports of manufactures of straw and palm leaf to Latin-American countries averaged in yearly value $94,900 for the years 1910–1914 and $204,000 for the years 1915–1917.

The Tariff Commission has received the following statement from an exporting house regarding the South American trade:

Women's straw hats constitute the largest percentage of hats shipped from the United States to South America. They are mostly made from sewn braids. Of these the greatest number are blocked, but not trimmed, though there is a fair quantity shipped already trimmed. As far as we know there are very few harvest hats or men's hats shipped from this market to South America.

The European war has had the effect of increasing the exporting of American straw hats to South America. American hats are undoubtedly being exported in larger quantities now than in the years of 1913 and 1914. While it is early for us to compare the season of 1917 and 1918 with the season of 1916 and 1917, we are under the impression that 1917 and 1918 will show an increase over the shipments of 1916 and 1917.

There is not a very large business done in the shipment of hats from there to South America, while, on the other hand, there is a very large business done in the shipping of both natural and dyed braids, which are made into men's and women's hats.[4]

We understand that in South America there are over 1,200 manufacturers of hats. It is undoubtedly cheaper for them to import the braids than to import the hats, which are very bulky, and, in proportion to their value, pay a great amount of freight. Incidently, the element of style, which changes so frequently, makes it desirable for any market to make their own hats.

Italy, before the war, did a fair amount of business with South America, in both woven body hats and also sewn braid hats, both for men and women.

In the West Indies there is a growing business in a cheap grade of women's hats. The Cuban market calls for sewn braid hats of a good quality. There is also a fair demand for the body hats, known as the Japanese paper Panama, a hat which is brought from Japan and blocked in this country.

American manufacturers are not as a rule enthusiastic about the export trade at present, nor are they optimistic regarding the possibilities of continuing and developing it after the war. In reply to

[1] Reexports of straw hats (exports of foreign merchandise) averaged in value $96,450 annually in the years 1915–1917, and $96,870 in the years 1910–1914. The chief countries to which foreign straw hats are exported are the United Kingdom, Cuba, Colombia, and Canada.

[2] Canada. Trade Reports of the Department of Customs.

[3] The value of artificial flowers and millinery exported to Canada amounted in 1917 to $1,118,200.

[4] The United States Commerce and Navigation Reports show 61,708,001 yards of straw braid reexported in 1917 and 36,277,200 yards in 1916.

inquiries, the Tariff Commission has received the following statements from representative manufacturers:

We ourselves have had several inquiries (concerning exports to foreign countries), but are doubtful if we could handle the business properly, so did not care to take it on.

We have had many inquiries for goods from foreign markets but do not care to develop this trade. The home market is good enough for us.

We always exported to Canada and have since the war began sold a few hats to Australia and South American countries. By selling reliable goods at low prices we hope to be able to continue this trade after the war.

We have no interest in export trade.

Our Canadian sales are good and we are pushing this business. We would like to do business in South America and Australia but do not find the outlook very promising.

The war has brought us some foreign business from Australia and quite some from Canada. The Australian demand in volume is mostly for inexpensive hats and in this line competition is particularly strong from England.

Undoubtedly the labor scale, from what brief information we have, is lower in England than it is here, which we presume will make it much more difficult to get export business after the war. The only possible chance we would have to keep up a certain proportion of this foreign business would be owing to the great diversity of shapes that we show as compared with what they show in England. (From a manufacturer of women's hats.)

We do not expect foreign trade to continue after the war, the chief reasons being duty on material and high wages preventing large exports.

Do not believe the American manufacturers can hold export business after the war; England and Italian exporters are more familiar with the demand and customs of the South American market and are better organized for that business.

IX. COMPETITIVE CONDITIONS.

Kinds of hats imported.—The imports of straw hats are classified for revenue purposes into two groups:

1. Hats, blocked or trimmed.
2. Hats, not blocked or trimmed.

In the first group are comprised all finished hats; in the second, semimanufactured products, viz., woven hat bodies in the rough. The latter must go through processes of bleaching,[1] dyeing, pressing, finishing, and trimming in American factories before they are ready for sale. The finished or trimmed hats, on the other hand, are ready for sale when imported and compete directly with the American-made straw hats. Hence, attention must be confined to the second group alone, i. e., trimmed hats, when discussing foreign competition.

Why women's hats are not imported.—It should at once be noted that practically no women's finished hats are imported into this country. With the exception of a few models brought each year from Paris, all straw hats worn by American women are of domestic manufacture. The explanations of this fact given by manufacturers and importers in answer to inquiries by the Tariff Commission may be summarized as follows:

1. Production in this country is more standardized. In foreign countries, women's hats are more usually custom-made products. American hats show more uniformity in shapes and hence can be turned out in large quantities at relatively low cost.

2. The shortness of the season and the necessity of making quick deliveries makes foreign competition difficult. As pointed out above, styles change suddenly, and in the height of the season goods are

[1] Some of the imported hat bodies, such as the Japanese imitation Panamas and those used for harvest hats, do not require bleaching.

[illegible] from resent of others. A manufacturer of [illegible] has written to the Tariff Commission:

"[illegible] make it or the [illegible] much more satisfactory when [illegible] the [illegible] the better it is for the industry.

"[illegible] of [illegible] are [illegible] a soft water—they must be sold [illegible] they are poor while fresh.

"[illegible] of [illegible] women's hats was summarized by a [illegible] Trade Association at the tariff hearings [illegible]:

"[illegible] in the [illegible] manufactured in this country. Some women [illegible] and [illegible] with them it is the trim. The style in which [illegible] women's hats are [illegible] the time [illegible] have changed before they are here. The [illegible] its styles by taking some of the ideas that have spoken [illegible] and [illegible] made within a week or two before [illegible] before [illegible] to attempt to make their hats until [illegible] come over from the other side and indicate what [illegible] wear. Then they make in their studios. I think I [illegible] in this country [illegible] some Fifth Avenue milliner will pay three or [illegible]

[illegible].—The imports of finished straw [illegible] of trimmed are almost exclusively for men's [illegible] inclusive the value of the annual [illegible] has averaged $[illegible]. The American product [illegible] compiled from the schedules of the census [illegible] The proportion of the home market [illegible] according to the calculation is 7.37 per [illegible] The [illegible] caused by the importation of finished hats [illegible] market was first noticeable about 1910. A representative [illegible] manufacturers stated before the Ways [illegible] in 1913:

"[illegible] the purpose did not seriously interfere with our home industry prior [illegible] there was a strong desire on the part of the hat retailers to purchase Italian [illegible] manufacturer need and naturally reflected the same [illegible] They were sold over the same counters and bought by the [illegible]

The character of foreign competition in the hat industry was again [illegible] at the 1913 tariff hearings:

"[illegible] France never made straw hats that were used in this country [illegible] People almost rarely wore straw hats, strange as it may [illegible] wear them they were shapes and fashions that nobody [illegible]

Methods of production in foreign countries.—The countries from [illegible] straw hats for men chiefly come are Italy and England. In the case of these countries is the factory system used to the [illegible] as in the United States. The Italian [illegible] of production, were described by the United States consul [illegible] 1912, as follows:

"[illegible] are upward of 100 factories devoted to braid work and [illegible] and unfinished hats. Only some 4,000 persons are [illegible] The outside workers are listed under two [illegible] 65,000 are "pigionali," i. e., live

[illegible]

[illegible] Tariff hearings, 1913, Vol. V, p. 4091.

in rented houses, usually near some factory, and 19,000 are "coloni," i. e., tenants of small farms worked on shares. More than 56,000 women and 26,000 girls under age are engaged in straw work. They work for the most part at home, and the making of the hat braid is, in the case of the coloni, done in addition to the usual work of the day.[1]

In England hats are made partly in homes and partly in factories. The manufacturers give out braid and the sewing is done by women and children in their homes near the factory. The rough hat bodies are then taken to the factory to be blocked and finished. In many cases the hats are sent back to the outworkers to be trimmed. In some of the largest factories all processes are now carried on under one roof, as in this country. Machinery of the same design as that found in American factories is used in England for sewing and pressing hats.

Lower costs abroad.—It is the opinion of the American manufacturers that the prewar conditions of production gave foreign producers the advantage of lower costs. The following quotation is taken from a brief submitted by the Straw Goods Association at the Tariff Hearings in 1913:

> Considerable effort has been made to obtain the exact manufacturing cost of sewed-braid hats, both trimmed and untrimmed, and representatives of several hat manufacturers went abroad for the purpose of investigating the straw-hat business as conducted in Europe, and to learn why they could manufacture hats so much cheaper than we could. They went through various hat factories and found them equipped equally as well as the straw-hat factories of the United States, and with all the modern appliances and machinery. An operator is able to make just as many hats over there as here. The work is all piecework, and, while unable to obtain the precise piecework price of hats, they did find that the average labor cost price per dozen was about 35 per cent of the cost price in the United States. This in particular applies to Italian factories, where the labor was in some instances about 25 per cent of what is paid in the United States. Indeed, the price of the sewed-braid hats was so atttractive that several American straw-hat manufacturers now import these hats in an untrimmed state, finding that these hats can be landed in the United States, all charges paid, cheaper than they can be made in their own factories.[2]

Much of the braid used in the production of Italian hats is a product of native straw plaited by peasant women in the region where the hats are made. England imports almost the entire supply of straw braids used in her hat factories, but her manufacturers have the advantage of free entry of this and other materials. In the United States, braid pays 15 or 20 per cent duty, according as it is bleached or unbleached. There is a duty of 15 to 25 per cent on glue, 7½ to 25 per cent on thread, and 45 per cent on silk hatbands. The leather sweatbands used in English hats are of domestic production; those used in the better grades of American hats, before the war, were imported, paying 30 per cent duty. Representative American manufacturers have expressed the opinion that the difference in the cost of production between American and foreign-made hats was fully equalized by the 40 per cent duty imposed by the tariff act of 1913.

Better seasonal distribution.—A possible further advantage of English and Italian manufacturers is to be found in better seasonal distribution of production. Both Italy and England had before the present war developed export trade in countries in the southern as well as in the northern hemisphere. Thus they were enabled to

[1] U. S. Commerce Reports, Apr. 11, 1912. [2] Tariff Hearings, 1913, Vol. V, p. 4997.

balance the slack season in one market with the busy season in another, securing an all-round demand for their goods. Italy not only exported to the United States, but also supplied a large proportion of the straw hats imported into Peru, Brazil, and the Argentine Republic. Some Italian hats were sent to Australia and South Africa.[1] These latter countries however, were chiefly supplied from England.

The English exports of straw hats to countries south of the Equator—Argentina, Cape of Good Hope, Transvaal, Victoria, and New South Wales, amounted in the years 1913–1916 to between 26 and 27 per cent of the exports to all countries for those years.[2]

Kinds and grades of foreign hats sold in United States.—The foreign straw hat most popular in the American market is the English sennit hat of the yachting shape. Such hats, retailing at $1.50 to $2 each, were until last year (season 1916–17) strong competitors of the domestic product. The buyer of men's straw hats for a large department store states:

> In the years 1914–1916 the English hat retailing at $2 was decidedly better-looking, superior in details of style and of manufacture and was more durable than the American hat selling at the same price. In addition it had the prestige of a foreign label.

Manufacturers and importers differ as to the importance of the various factors above enumerated, in determining the sale of English straw hats. The foreign label has been so often counterfeited that it has lost much of its importance as a selling factor. The details of style of the English hats, such as the height of the crown and the width of the brim, are often determined by the American retailers when giving their orders. Certain peculiarities of the finish of the English hats are distinctive. They are generally made of whole straw and hence are heavier than the American split product. The English hat on this account does not need as much sizing and hence stands damp weather without becoming soft or sticky. There is probably more hand work done on English hats, in blocking and finishing, than on the American hats selling at comparable prices.

X. COMMENTS AND SUGGESTIONS AS TO TARIFF CLASSIFICATIONS.

It should be noted that two general classes of commodities are taxable under paragraph 335: (1) Materials such as straw braid, etc., used in the manufacture of straw hats and (2) hats manufactured from these materials. Both the materials and the hats are again split up into two subdivisions; on the basis of the stages in process of manufacture through which they have passed. Thus dyed braid is taxed 5 per cent higher than undyed and blocked or trimmed hats 15 per cent higher than those not blocked or trimmed. Consequently we have the following scale of duties:

	Per cent.
On braids of straw or similar materials:	
(*a*) If not dyed or bleached	15
(*b*) If dyed or bleached	20
On hats of straw or similar materials:	
(*a*) If not blocked or trimmed	25
(*b*) If blocked or trimmed	40

[1] The exports of Italian hats were valued at $768,900 in 1915. Of this amount $58,650 went to Argentina and $68,050 to Brazil. Movimenti Commerciale, 1915.

[2] Trade of the United Kingdom with foreign countries. 1913, 1914, 1915, and 1916.

The following changes in the act of October 3, 1913, have been suggested by manufacturers and importers:

(1) That sewn-braid bodies should be distinguished from woven-hat bodies, in the class "not blocked or trimmed." A higher rate of duty should be imposed on the sewn-braid bodies than on woven-braid hats since none of the latter are produced in the United States.

(2) That the classification "Hats, blocked or trimmed" should be subdivided into (*a*) hats, blocked; (*b*) hats, blocked and trimmed, and that the latter subdivision should be dutiable at a higher rate than the former.

(3) That a distinction should be made in the class "Hats not blocked or trimmed" between bleached and unbleached bodies, in order that the American manufacturers might be protected against the importation of the Japanese imitation Panama hats, which require no bleaching.

(4) That the duty on straw braid, not bleached or dyed, should be removed, and the present ad valorem duty on bleached and dyed braid should be changed to a specific duty giving an equivalent amount of protection.

(5) That men's hats and women's hats should be separately classified and should be dutiable at different rates, because there is practically no foreign competition on women's hats.

Hats not blocked or trimmed.—An importing firm suggests that the classification "hats not blocked or trimmed," should be subdivided into two groups (1) sewn-braid bodies; (2) woven-body hats. A higher rate of duty should be imposed on the sewn-braid bodies than on woven-body hats, since the latter are not produced in this country. The sewn-braid body, on the other hand, is the standard product of American factories. Moreover, the American manufacturers need a duty on sewn-braid bodies to offset the duty which they have to pay on the imported straw braid.

Blocked and trimmed hats.—The same firm suggests further that blocked and trimmed hats should not be included in one class. A higher rate of duty should be imposed on hats which have been both blocked and trimmed, than on those which have merely been blocked. The former have required greater expenditure of labor and also the trimmings, if imported as before the war, are dutiable. Therefore, in order to secure a more scientific adjustment of duties, blocked and trimmed hats should be placed in separate classes, and a differential should be imposed upon the trimmed hats.

Bleached and unbleached hat bodies.—A distinction should be made in the tariff laws, according to the view of a large manufacturer. At present the woven hat bodies come in under one classification; namely, "hats not blocked or trimmed," and are dutiable at 25 per cent ad valorem. The Japanese imitation Panamas, this manufacturer believes, are particularly dangerous competitors of the American sewn-braid hats, and he thinks that since Japanese hats do not require bleaching, they should be dutiable at a higher rate of duty than other woven hat bodies.

Duties on straw braids.—A firm engaged in dyeing and bleaching straw braids believes that the present ad valorem duties (20 per cent on braids dyed, bleached, colored, or stained; 15 per cent on braids not dyed, bleached, etc.) does not present a scientific method of dis-

crimination between the two sorts of braids. The cost of dyeing or bleaching the braid is not dependent on the *value* of the braid, but upon its bulk and weight. Expensive braids often cost less to bleach or dye than cheap braids, but under the present law the amount of protection afforded to bleachers and dyers (represented by the differential of 5 per cent) is always in proportion to the value of the braid, and not necessarily in proportion to the cost of dyeing or bleaching. In general, the present law gives excessive protection to bleachers and dyers when treating the expensive braids, and not enough protection in dyeing cheap, bulky braids.

A specific duty laid either according to units of weight or measurement, this firm submits, would be more equitable to dyers and bleachers. Such a system, however, might work injustice to manufacturers of sewn-braid hats, imported hats being dutiable at ad valorem rates. A suggested method of improving the law, aiding the bleaching and dyeing firms, and manufacturers, as well, is the abolition of the duty on braids in the rough (i. e., braids not dyed, bleached, colored, or stained). Then, a specific duty might be imposed on all dyed and bleached braids imported, to protect American firms engaged in the business of dyeing and bleaching.

A number of large manufacturers making men's and women's hats have expressed themselves in favor of the removal of the duties on straw braids. No domestic industry is protected by these duties, since no straw braid is at present produced in this country. Manufacturers of straw hats, however, are burdened on account of the duty with higher cost in competing with foreign manufacturers, both in the domestic and foreign markets. The higher costs of braid to the manufacturers do not consist merely in the amount of the duty paid by importers, but a series of other costs are also included. The necessity of paying a duty on raw materials makes the importers' business more complicated and consequently makes it necessary for them to operate on a larger margin of profit. Drawbacks of duties paid on imported braid are indeed allowed to manufacturers when straw hats containing such braids are exported, but the process of recovering the amounts due is so cumbersome and attended by so many delays that manufacturers feel hardly repaid for the trouble involved.[1]

A few of the manufacturers favor the retention of the duties on straw braids, because they anticipate that if the braids were put on the free list the next step would be a lowering of the duty on the finished hats. The reduction might be more than enough to compensate for the lower cost of braid. They regard the present tariff situation in their industry as satisfactory and their motto is "Let well enough alone."

TARIFF DISCRIMINATIONS.

The only important cases of discrimination against American straw hats in foreign tariffs are found in Canada and Australia. In the former country English hats are dutiable under the British preferential tariff at 25 per cent ad valorem; American hats pay the general tariff rate—37½ per cent. The Australian tariff admits English hats at 35 per cent ad valorem and imposes a duty of 40 per cent on American hats.

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[1] Drawbacks repaid on account of straw hats exported amounted to $13,919 in 1917.

Straw hats—Production in United States.

[From Census.]

States.	1904	1909	1914
Maryland	$2,035,519	$3,347,330	$4,928,000
Massachusetts	3,325,973	6,589,427	5,782,000
New York	2,624,550	7,617,000	10,182,000
Pennsylvania	555,236	872,135	1,011,000
Virginia		73,618	
New Jersey			844,000
Missouri			731,000
All other	1,815,412	2,934,695	2,088,000
Straw hats made in allied industries		1,271,973	2,474,353
Total	10,356,690	22,606,228	27,918,353

Straw hats[1]—Production in Japan.[2]

	1915		1916		1917		1918	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Dozens.		*Dozens.*		*Dozens.*		*Dozens.*	
Straw hats	734,549	$1,097,099	774,723	$1,196,405	726,145	$1,243,506	758,312	$1,694,288
Imitation panamas	163,412	1,041,953	375,964	2,155,192	327,561	1,931,564	365,246	2,404,782

PLAITS OF STRAW, ETC.

	1915		1916		1917		1918	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Bundles.		*Bundles.*		*Bundles.*		*Bundles.*	
Straw	8,826,709	$524,509	15,492,994	$1,390,578	16,932,075	$1,905,582	19,041,767	$2,888,404
Wood shavings	2,345,414	70,779	3,525,435	139,921	8,349,489	385,335	5,708,058	287,225
Straw and wood	377,090	34,345	16,050	997	27,299	1,580	37,200	7,047
Manila hemp	31,666,931	4,073,046	42,966,032	5,478,954	41,465,189	6,067,127	38,145,945	6,978,482
Total	33,216,144	4,702,679	62,000,411	7,000,250	66,774,042	8,259,544	62,932,970	8,181,289

[1] Production in Great Britain, 1,434,000 dozens, valued at $6,970,000. Census of production, 1907.
[2] Data from statistical report of the department of agriculture and commerce, Japan, 1918. Yen converted to dollars at $0.498 per yen.

Imports by countries.

MATERIALS FOR STRAW HATS—DUTIABLE.

FISCAL YEARS.

Imported from—	1910	1911	1912	1913
France	$320,675	$418,275	$395,879	$251,491
Italy	1,056,627	701,329	680,347	545,347
England	472,260	413,743	346,393	355,225
Switzerland	189,786	162,795	109,249	149,692
China[1]	663,218	650,017	598,232	391,274
Japan	987,476	1,292,099	1,970,970	3,146,053
All other	1,361,472	959,151	907,646	780,739
Total	5,051,914	4,597,409	5,010,046	6,320,161
Philippine Islands (free)				1,742

[1] Excluding leased territory, German.

Imports by countries—Continued.

MATERIALS FOR STRAW HATS—DUTIABLE—Continued.

FISCAL YEARS—Continued.

Imported from—	1914	1915	1916	1917	1918
.....	$788,118	$140,127	$308,581	$501,612	$260,899
.....	438,974	457,436	1,077,182	672,077	1,004,788
.....	583,985	320,281	252,495	362,083	210,003
l.....	211,996	126,505	252,696	71,348	26,419
.....	169,604	267,923	837,763	1,743,336	3,176,996
.....	3,589,052	3,581,397	3,315,022	4,341,971	4,080,862
.....	554,894	108,175	53,402	46,939	61,900
.....	6,336,623	5,001,844	6,097,141	7,739,366	8,821,867
Islands (free).....	16,894	6,926	3,091	2,482	36,534

CALENDAR YEARS.

nported from—	1918	1919		1920	
		Yards.	Value.	Yards.	Value.
.....	$36,480	4,561,711	$52,379	4,384,182	$60,547
.....	787,677	64,006,800	714,844	89,637,870	1,118,779
.....	91,735	8,209,976	83,502	51,192,090	369,766
l.....	7,175	13,043,090	130,791	20,608,508	263,632
.....	4,515,298	988,377,731	4,030,128	1,330,027,299	8,379,819
.....	4,330,480	919,880,026	3,475,639	1,376,315,478	6,104,343
.....	14,306	3,809,700	21,318	5,535,950	45,699
(dutiable).....	9,783,151	2,001,889,034	8,508,601	2,877,701,377	16,340,585
Islands (free).....	46,652	.....	27,231	1,513,453	44,038

ng leased territory—German.

ONNETS, AND HOODS OF STRAW AND SIMILAR MATERIALS, DUTIABLE.

[FISCAL YEARS.]

orted from—	1910	1911	1912	1913	1914	1915
.....	$461,467	$237,822	$461,409	$539,280	$542,696	$778,887
.....	42,214	161,568	613,717	1,134,350	1,608,904	1,244,214
.....	545,389	714,499	1,172,849	834,978	1,355,701	1,063,992
.....	244,153	168,441	171,720	117,528	331,347	503,539
.....	114,873	24,917	72,767	59,778	97,782	111,326
.....	126,744	371,541	428,100	282,138	374,464	281,310
.....	252,003	282,825	297,826	269,178	328,799	343,106
.....	388,522	292,093	432,608	266,197	254,189	142,090
.....	22,074	36,691	108,449	29,550	12,303	13,785
.....	701,177	630,425	580,694	556,462	626,583	383,830
dutiable.....	2,898,616	2,920,822	4,340,139	4,089,439	5,532,768	4,866,079
ppine Islands (free)[1]	121,360	135,317	336,279	297,545	232,854	259,506
.....	3,019,976	3,056,139	4,676,418	4,386,984	5,765,622	5,125,585

Imported from—	1916	1917	1918
.....	$1,174,713	$1,103,735	$424,905
.....	1,235,723	521,587	68,981
.....	739,345	828,954	677,516
.....	513,019	577,762	446,030
.....	136,119	126,610	100,343
.....	142,922	157,719	134,473
.....	275,392	234,038	177,186
.....	104,866	73,867	44,550
.....	89,149	364,344	74,806
.....	276,120	794,819	422,038
dutiable.....	4,687,368	4,419,091	2,570,828
ppine Islands (free)[1].....	390,981	652,066	634,366
.....	5,078,349	5,071,157	3,205,194

ce Aug. 6, 1909.

Imports by countries—Continued.

HATS, BONNETS, AND HOODS OF STRAW AND SIMILAR MATERIALS—NOT BLOCKED.[1]

[Calendar years.]

Imported from—	1918[2]		1919		1920	
	Number.	Value.	Number.	Value.	Number.	Value.
Italy	456,543	$261,771	1,287,838	$1,045,033	1,866,566	$1,369,726
Panama	11,275	14,849	9,221	14,258	20,880	38,349
Salvador	25,253	34,266	57,104	87,969	41,406	64,935
Mexico	3,097,015	193,503	6,002,885	349,892	4,216,417	473,608
Dutch West Indies	909,264	97,704	1,017,002	141,041	1,133,017	216,660
Colombia	171,886	167,434	653,231	801,670	754,993	1,163,105
Ecuador	249,356	284,874	369,207	527,205	282,853	464,470
Peru	10,173	23,816	19,193	43,451	10,465	27,459
China	126,375	11,267	2,018,310	75,701	2,559,621	192,484
Dutch East Indies	664,271	17,107	2,441,311	86,676	6,211,174	386,963
Japan	44,802	20,050	100,159	34,232	1,270,975	720,502
All other	22,473	3,929	94,502	62,763	.....	.....
Total dutiable	5,788,686	1,130,570	14,069,963	3,269,891	18,683,336	5,277,960
Philippine Islands (free)	329,997	310,354	362,610	583,256	672,911	820,342
Total	6,118,683	1,440,924	14,432,573	3,853,147	19,356,247	6,098,302

[1] Imports by countries not stated separately for hats blocked or trimmed and hats not blocked or trimmed prior to July, 1918.
[2] From July 1 to Dec. 31, 1918.

HATS, BONNETS, AND HOODS OF STRAW OR SIMILAR MATERIALS, BLOCKED OR TRIMMED.[1]

[Calendar years.]

Imported from—	1918[2]		1919		1920	
	Number.	Value.	Number.	Value.	Number.	Value.
aly	1,061	$972	24,611	$34,511	127,906	$166,647
ngland	7,335	10,842	60,011	79,498	566,366	713,736
anama	3	16	10	146	2	8
lvador	54	108	.....	.....	.....	.....
exico	50	70	97	37	86	69
ina	12,000	3,731	8,422	4,078	15,016	5,626
utch East Indies	2	1	.....	.....	.....	.....
pan	478,040	162,060	1,283,682	533,720	1,706,217	788,613
ilippine Islands	42	13	.....	.....	.....	.....
l other	6,331	8,015	25,527	55,173	.....	.....
Total	504,918	185,828	1,402,360	707,163	2,459,757	1,750,328

[1] Not shown separately prior to 1918 (July). [2] July 1 to Dec. 31, 1918.

... of consumption—Revenue.

MATERIALS.

... SHAPES OR SQUARES, COMPOSED WHOLLY OR IN CHIEF VALUE ... WILLOW, OSIER, RATTAN, REAL HORSEHAIR, CUBA BARK, OR ... ORNAMENTING HATS, BONNETS, OR HOODS.

... BLEACHED, DYED, OR COLORED.

(Under general tariff.)

...	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
	Yards.				Per cent.
...		$2,292,731	$343,909	.....	15.00
...		2,999,624	449,943	.....	15.00
...		4,254,291	638,143	.....	15.00
...		3,800,614	570,092	.....	15.00
...		3,723,124	558,468	.....	15.00
...		5,338,126	800,718	.....	15.00
...		5,891,258	883,688	.....	15.00
...		4,872,923	730,938	.....	15.00
...		5,412,460	811,869	.....	15.00
...		6,795,587	1,019,338	.....	15.00
...		6,833,766	1,025,064	.....	15.00
...	1,327,856,445	7,968,243	1,195,236	$0.00578	15.00
...	2,350,135,662	9,256,325	1,388,449	.00397	15.00
...	1,708,567,519	9,865,548	1,479,832	.00866	15.00
...	600,737,114	3,417,623	512,643	.....	15.00
... Philippine Islands (acts of Mar. 3, 1905, Aug. 5, 1909, and Oct. 3, 1913).					
...	5 per cent of 15 per cent.	$283	$31	.....	11.25
...	Free	3,285	.....	.....	.....
...	...do	13,845	.....	.....	.....
...	...do	2,933	.....	.....	.....
...	...do	3,091	.....	.....	.....
...	...do	2,482	.....	.....	.....
...	...do	36,534	.....	.....	.....
...		46,652	.....	.....	.....
...	28,740	2,400	.....	$0.084	.....
...	1,513,103	43,873	.....	.029	.....
From Cuba (reciprocity treaty, Dec. 27, 1903).					
1908	15 per cent less 20 per cent.	$86	$10	.....	12.00
Duty remitted (on above No. 2327).					
1912	For use of foreign diplomatic officers.	$48	.....	.....	.....
BLEACHED, DYED, OR COLORED.					
1908	20 per cent	$353,020	$70,604	.....	20.00
1909	...do	414,749	82,949	.....	20.00
1910	...do	476,204	95,240	.....	20.00
1911	...do	555,797	111,159	.....	20.00
1912	...do	1,070,317	214,063	.....	20.00
1913	...do	687,666	137,533	.....	20.00
1914	...do	356,698	71,339	.....	20.00
1915	...do	340,428	68,085	.....	20.00
1916	...do	575,419	115,083	.....	20.00
1917	...do	550,471	110,094	.....	20.00
1918	...do	633,817	126,763	.....	20.00
1918 [1]	...do	26,424,902	395,951	79,190	$0.015	20.00
1919 [1]	...do	22,109,047	249,814	49,963	.....	20.00
1920 [1]	...do	22,739,154	319,384	63,877	.011	20.00
1921 [2]	...do	17,364,288	160,000	32,000	.014	.....
From Philippine Islands.					
1919	Free	29,852	$5,844	.....	$0.196	.....
1920 [1]	...do	350	165	.....	.471	.....

[1] Calendar year. [2] Six months ended June 30, 1921.

Imports for consumption—Revenue—Continued.

HATS, BONNETS, AND HOODS.

COMPOSED OF STRAW, CHIP, GRASS, PALM LEAF, WILLOW, OSIER, RATTAN, CUBA BARK, OR MANILA HEMP, WHETHER WHOLLY OR PARTLY MANUFACTURED. (Acts of 1897 and 1909.)

NOT TRIMMED.

Under general tariff.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1908	35 per cent		$2,031,359	$710,975		35.00
1909	do		1,867,119	653,492		35.00
1910	do		2,382,423	833,848		35.00
1911	do		2,461,674	861,586		35.00
1912	do		3,612,066	1,264,433		35.00
1913	do		3,849,364	1,347,277		35.00
1914	do		425,025	148,758		35.00

From Philippine Islands (acts of Mar. 3, 1905, and Aug. 5, 1909).

1908	75 per cent of 35 per cent.		$18,991	$4,985		26.25
1909	do		34,432	9,039		26.25
1910	do		2,310	606		26.25
	Free		131,651			
1911	do		135,328			
1912	do		336,180			
1913	do		297,451			

From Cuba (reciprocity treaty, Dec. 27, 1903).

1908	35 per cent, less 20 per cent.		$836	$234		28.00
1909	do		1,011	283		28.00
1910	do		1,482	415		28.00
1911	do		1,047	293		28.00
1912	do		120	33		28.00
1913	do		110	30		28.00
1914	do		31	8		28.00

Duty remitted.

1911	For use of foreign diplomatic officers.		$15			

Imports for consumption—Revenue—Continued.

HATS, BONNETS, AND HOODS—Continued.

COMPOSED WHOLLY OR IN CHIEF VALUE OF STRAW, CHIP, GRASS, PALM LEAF, WILLOW, OSIER, RATTAN, CUBA BARK, OR MANILA HEMP, WHETHER WHOLLY OR PARTLY MANUFACTURED. (Act of 1913.)

NOT BLOCKED OR TRIMMED.

Under general tariff.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Number.				*Per cent.*
1914	25 per cent		$3,919,006	$979,751		25.00
1915	do		4,006,121	1,001,530		25.00
1916	do		4,036,492	1,009,123		25.00
1917	do		4,028,840	1,007,210		25.00
1918	do		2,154,983	538,745		25.00
1918[1]	do		2,119,792	529,948		25.00
1919[1]	do	14,899,876	3,265,673	816,418	$0.219	25.00
1920[1]	do	16,031,933	3,988,467	997,117	.249	25.00
1921[2]	do	7,654,760	1,405,293	351,323		25.00
From Philippine Islands (act of Oct. 3, 1913).						
1914	Free		$232,777			
1915	do		259,265			
1916	do		392,632			
1917	do		501,252			
1918	do		632,956			
1918[1]	do		592,151			
1919[1]	do	360,870	579,177			
1920[1]	do	659,092	781,545			
From Cuba (reciprocity treaty, Dec. 27, 1903).						
1914	25 per cent, less 20 per cent.		$181	$36		20.00
1915	do		1,516	303		20.00
1916	do		540	108		20.00
1918	do		1,608	321		20.00
1919[1]	do	48	38	7		20.00
1920[1]	do	396	846	169		20.00

TRIMMED.

Under general tariff.

1908	50 per cent		$129,489	$64,744		50.00
1909	do		164,125	82,062		50.00
1910	do		215,563	107,781		50.00
1911	do		264,270	132,135		50.00
1912	do		343,752	171,876		50.00
1913	do		352,298	176,149		50.00
1914	do		21,354	10,677		50.00
From Philippine Islands (acts of Mar. 3, 1905, and Aug. 5, 1909).						
1908	75 per cent of 50 per cent.		$10	$3		37.50
1909	do		8	3		37.50
1910	do		4	1		37.50
1911	Free		9			
1912	do		140			
1913	do		20			
From Cuba (reciprocity treaty Dec. 27, 1903).						
1908	50 per cent, less 20 per cent.		$80	$32		40.00
1909	do		71	28		40.00
1910	do		77	31		40.00
1911	do		103	41		40.00
1912	do		42	16		40.00
1913	do		17	6		40.00

[1] Calendar year. [2] Six months ended June 30, 1921.

Imports for consumption—Revenue—Continued.

HATS, BONNETS, AND HOODS—Continued.

COMPOSED WHOLLY OR IN CHIEF VALUE OF STRAW, CHIP, GRASS, PALM LEAF, WILLOW, OSIER, RATTAN, CUBA BARK, OR MANILA HEMP, WHETHER WHOLLY OR PARTLY MANUFACTURED. (Act of 1913.)—Continued.

TRIMMED—continued.

Duty remitted.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Number.				*Per cent.*
1909	For use of foreign diplomatic officers.		$2			
		BLOCKED OR TRIMMED.				
1914	40 per cent		$881,761	$352,704		40.00
1915	do		630,375	252,150		40.00
1916	do		572,815	229,126		40.00
1917	do		546,143	218,457		40.00
1918	do		231,141	92,456		40.00
1918[1]	do		175,337	70,134		40.00
1919[1]	do	105,114	165,741	66,296	$1.577	40.00
1920[1]	do	696,271	895,460	358,184	1.286	40.00
1921[2]	do	618,122	790,706	316,282		40.00
		From Philippine Islands (acts of Oct. 3, 1913).				
1914	Free		$62			
1915	do		178			
1916	do		12			
1917	do		19,381			
1918	do		2,824			
1918[1]	do		22,760			
1919[1]	do	1,740	4,079		$2.344	
1920[2]	do	13,819	38,797		2.808	
		From Cuba (reciprocity treaty, Dec. 27, 1903)				
1915	40 per cent, less 20 per cent.		$20	$6		32.00
1920[2]	do	120	213	68		32.00
		Duty remitted.				
1914	For use of foreign diplomatic officers.		$8			
1915	do		10			

[1] Calendar year. [2] Six months ended June 30, 1921.

PAPER HATS—IMITATION PANAMA.[1]

1918[2]	30 per cent	609,719	$186,446	$55,933	$0.306	30.00
1919[3]	do	1,514,570	554,030	166,209	.366	30.00
1920[3]	do	989,362	451,915	135,575	.457	30.00
1921[4]	do	293,766	139,139	41,741		30.00
		FROM PHILIPPINE ISLANDS.				
1918[3]	Free	9,168	$13,093		$1.428	

[1] Not separately stated prior to 1918.
[2] From July 1 to Dec. 31, 1918.
[3] Calendar year.
[4] Six months ended June 30, 1921

Domestic exports—Hat and hat materials—Other than felt.

[Calendar years.]

ted to—	1918			1919		
	For men and boys.	For women and children.		For men and boys.	For women and children.	
		Untrimmed.	Trimmed.		Untrimmed.	Trimmed.
.....	$237,829	$828,572	$760,780	$243,468	$937,580	$1,064,186
.....	54,678	6,552	20,796	69,967	6,751	48,173
.....	41,733	18,494	11,442	69,614	20,541	20,504
lands.....	73,020	4,137	3,455	30,063	2,651	11,659
Republic.....	30,451	2,169	3,890	46,027	3,950	6,891
.....	1,990	60,911	49,823	3,595	19,252	37,908
.....	26,468	1,033	3,043	21,613	1,076	3,390
.....	5,799	2,100	1,668	17,762	958	1,884
.....	3,953	691	3,572	19,311	3,459	2,209
.....	121,263	50,904	65,721	217,865	66,569	139,361
l.....	597,184	975,563	924,190	739,785	1,062,787	1,336,165

Exported to—	1920		
	For men and boys.	For women and children.	
		Untrimmed.	Trimmed.
.....	$200,888	$663,619	$997,379
.....	96,878	10,137	116,495
.....	336,641	13,288	23,248
Republic.....	70,890	7,100	20,497
.....	133,098	12,125	10,391
.....	5,528	29,927	34,536
.....	28,798	2,621	7,100
.....	44,073	2,130	171
.....	8,631	1,916	2,252
.....	286,600	89,268	126,050
.....	1,212,025	832,131	1,338,119

Rates of duty.

NNETS, AND HOODS COMPOSED WHOLLY OR IN CHIEF VALUE OF STRAW, RASS, PALM LEAF, WILLOW, OSIER, RATTAN, CUBA BARK, OR MANILA VHETHER WHOLLY OR PARTLY MANUFACTURED.

.	Tariff classification or description.	Rates of duty specific and ad valorem.
)	Bonnets, hats, and hoods for men, women, and children, composed of chip, grass, palm-leaf, willow, or straw, or any other vegetable substance, hair, * * *, or other material, not specially enumerated or provided for in this act.	30 per cent ad valorem.
)	* * * Manufactures of wood, or of which wood is the component material of chief value, not specially provided for in this act.	35 per cent ad valorem.
)	Manufactures of * * *, chip, grass, * * * palm-leaf, straw, weeds, or of which these substances or either of them is the component material of chief value, not specially provided for in this act.	30 per cent ad valorem.
1	Manufactures of wood, or of which wood is the component material of chief value, not specially provided for in this act.	25 per cent ad valorem.
2	Manufactures of * * * grass, * * * palm leaf, straw, weeds, or of which these substances or either of them is the component material of chief value, not specifically provided for in this act.	25 per cent ad valorem.
)	* * * hats, bonnets, and hoods, composed of straw, chip, grass, palm leaf, willow, osier, or rattan, whether wholly or partly manufactured, but not trimmed.	35 per cent ad valorem.
	if trimmed	50 per cent ad valorem.
2	* * * hats, bonnets, and hoods, composed wholly or in chief value of straw, chip, grass, palm leaf, willow, osier, rattan, cuba bark, or manila hemp, whether wholly or partly manufactured, but not trimmed.	35 per cent ad valorem.
	if trimmed	50 per cent ad valorem.
4	manufactures of ramie hat braids	Do.
5	hats, bonnets, and hoods composed wholly or in chief value of straw, chip, grass, palm leaf, willow, osier, rattan, cuba bark, or manila hemp, whether wholly or partly manufactured, but not blocked or trimmed.	25 per cent ad valorem.
	if blocked or trimmed, and in chief value of such materials	40 per cent ad valorem.
	Paragraphs 352, act of 1894; 409, act of 1897; 422, act of 1909; and 335, act of 1913, supra, contain provisions restricting the terms "grass" and "straw" to these substances in their natural form and structure to the exclusion of separated fiber thereof.	

Rates of duty—Continued.

BRAIDS OF STRAW AND SIMILAR MATERIALS USED IN THE MANUFACTURE OF STRAW HATS.

Act of—	Par.	Tariff classification or description.	Rates of duty specific and ad valorem.
1883	448	Hats, etc., materials for: Braids, plaits, flats, laces, * * * willow sheets and squares, used for making or ornamenting hats, bonnets, and hoods, composed of straw, chip, grass, palm leaf, willow, hair, * * * or any other substance or material, not specially enumerated or provided for in this act.	30 per cent ad valorem.
Feb. 18, 1890.	.....	Braids, plaits, flats, willow sheets, and squares fit only for use in making or ornamenting hats, bonnets, and hoods, composed of straw, chip, grass, palm leaf, willow, hair, * * * or any vegetable material, not specially enumerated or provided for.	Do.
1890	518	Braids, plaits, laces, and similar manufactures composed of straw, chip, grass, palm leaf, willow, osier, or rattan, suitable for making or ornamenting hats, bonnets, and hoods.	Free.
1894	417	Braids, plaits, laces, and similar manufactures, composed of straw, chip, grass, palm leaf, willow, osier, or rattan, suitable for making or ornamenting hats, bonnets, and hoods.	Do.
1897	409	Braids, plaits, laces, and willow sheets or squares, composed wholly of straw, chip, grass, palm leaf, willow, osier, or rattan, suitable for making or ornamenting hats, bonnets, or hoods, not bleached, dyed, colored, or stained.	15 per cent ad valorem.
		if bleached, dyed, colored, or stained.....	20 per cent ad valorem.
1909	422	Braids, plaits, laces, and willow sheets or squares, composed wholly or in chief value of straw, chip, grass, palm leaf, willow, osier, rattan, real horsehair, cuba bark, or manila hemp, suitable for making or ornamenting hats, bonnets, or hoods, not bleached, dyed, colored, or stained.	15 per cent ad valorem.
		if bleached, dyed, colored, or stained.....	20 per cent ad valorem.
1913	334	Ramie hat braids.....	40 per cent ad valorem.
1913	335	Braids, plaits, laces, and willow sheets or squares, composed wholly or in chief value of straw, chip, grass, palm leaf, willow, osier, rattan, real horsehair, cuba bark, or manila hemp, suitable for making or ornamenting hats, bonnets, or hoods, not bleached, dyed, colored, or stained.	15 per cent ad valorem.
		if bleached, dyed, colored, or stained.....	20 per cent ad valorem.

Court and Treasury Decisions.

Act of 1883.

In 1883 the rate on bonnets, hats, and hoods was made 30 per cent ad valorem and that on materials 20 per cent. The enumeration of straw and other materials was followed by the words "any other substance or material."

The hat trimmings cases arose under this act. Ribbons of silk and cotton, silk chief value, known as "trimmings" and used exclusively or chiefly as trimmings for hats, bonnets, and hoods, were held dutiable as hat trimmings and not as manufactures of silk.

So also were trimmings of silk and metal, metal chief value, and piece goods known as "chinas" and "marcelines" chiefly used for lining hats and bonnets. There was no restriction upon the kind of material; if they were trimmings for hats and were chiefly so used the provision applied, whatever the material. (Hartranft *v.* Langfeld, 125 U. S., 128; Robertson *v.* Edelhoff, 132 U. S., 614; Cadwalader *v.* Wanamaker, 149 U. S., 531; Walker *v.* Seeberger, 149 U. S., 541; Hartranft *v.* Meyer, 149 U. S., 544; Meyer *v.* Cadwalader, 4 Fed., 19; Fisk *v.* Seeberger, 38 Fed., 718; Walker *v.* Seeberger, 4 Fed., 724.)

The words "not specially enumerated or provided for in this act" were interpreted by the Attorney General as applicable to articles of the description mentioned in the provision and not to the material from which such articles were made. (17 Opin. Att'y Gen., [illegible]

of woven willow with a backing of thin cotton cheesecloth glued vere held exempt from duty under this act as sparterre. 6 (T. D. 11691).)

ACTS OF 1890.

t of 1883 was amended by the act of February 18, 1890, f restriction (*a*) by changing the general phrase "any other e or material" to "any vegetable material"; (*b*) by eliminat- trimmings, and tissues from the enumeration of materials; by substituting "fit only for use in" for "used for" before s "making or ornamenting hats, bonnets, and hoods." Oil- hatsweats was held dutiable as oilcloth and not as material (G. A. 84 (T. D. 10393).)

were further restrictions in the general tariff act of that year. ific provision for hats, bonnets, and hoods was omitted; s "any vegetable material" were eliminated; so were "flats, heets, and squares" and also "hair and whalebone" as ma- nd "braids, plaits, laces, and similar manufactures com- straw, chip, grass, palm leaf, willow, osier, or rattan suit- making or ornamenting hats, bonnets, and hoods," were ed to the free list.

urts held that it was sufficient to make the paragraph e if the "predominant and characteristic component" of those enumerated. Schiff *v.* U. S., 99 Fed., 555, holding l straw braids and silver straw braids composed chiefly fiber, the remainder being metal, cotton, and glue, to be as manufactures in part of metal and not free as braids or hats.

w words "similar manufactures" were given a liberal inter- . Plateaux or "flats" consisting of braids or plaits of straw woven together in an oval form and used for making hats, which were manipulated into the desired form and r wired and then trimmed, were declared not to be braids but were held to be "similar manufactures" composed of l suitable for making hats, and therefore exempt from duty an dutiable as manufactures of straw. (U. S. *v.* Bacharach, 990; also Worthington *v.* U. S., 86 Fed., 118.)

ovision for braids composed of straw was held to include straw and cotton, straw constituting more than 71 per uantity and about 75 per cent in value. (U. S. *v.* Rheims Fed., 1020, affirming 154 Fed., 865.)

for hats composed in part of materials not enumerated in the visions were held not exempt from duty although known in e as braids for hats. (G. A. 4036 (T. D. 18723).)

ACT OF 1894.

the act of 1894, which reenacted the provisions in the act braids of Cuban bast were held exempt from duty as braids l of chip and not dutiable as braids of vegetable fiber. G. T. D. 16424). And the word "suitable" in the phrase "suit- making or ornamenting hats, bonnets, and hoods" was held t free entry to such braids as were suitable for the purposes

specified in the particular provision, and raffia braids not found to be so suitable were held dutiable as manufactures of grass. (G. A. 3529 (T. D. 17267).) *Braids of bast, silk, and gum, silk chief value,* held dutiable as silk braids. (G. A. 3584 (T. D. 17393).)

Hatbands of cotton held dutiable as trimmings or as galloons according to the width, being galloons when less than 1 inch and trimmings when 1 to 2½ inches wide. (U. S. *v.* Graef, 127 Fed., 688 (T. D 24975), affirming G. A. 4991 (T. D. 23280).)

Plaits woven into sheets in the form of plateaux or matting were held not entitled to classification as "braids, plaits, laces, or similar manufactures." (G. A. 4013 (T. D. 18615).)

ACT OF 1897.

In 1897 the hat material provision was restored to the dutiable list. Braids, etc., bleached, dyed, colored, or stained, were made dutiable at 20 per cent ad valorem, and those not bleached, dyed, colored, or stained at 15 per cent. Willow sheets or squares were again enumerated with braids, plaits, and laces, and the words "similar manufactures" were stricken out. The provision in the free list for sparterre was also eliminated.

The provision for manufactures of ramie in paragraph 347 of the act of 1897 was held to be merely a general catch-all clause inserted with the intention of embracing articles omitted from other provisions in the act, and to be less specific than the provision in paragraph 339, for braids of vegetable fiber and braids of ramie were held dutiable under paragraph 339. (United States *v.* Rosenberg, 145 Fed., 343; followed in G. A. 6280 (T. D. 27062), as to braids composed wholly or in chief value of ramie.)

Hats, bonnets, and hoods composed of straw, chip, grass, palm leaf, willow, osier, or rattan, whether wholly or partly manufactured, were enumerated in the same paragraph at 35 per cent ad valorem if not trimmed, and at 50 per cent if trimmed. The terms "grass" and "straw" were restricted to those substances in their natural form and structure; the separated fiber was expressly excluded.

The insertion of the word "wholly" materially restricted the provision and was held to limit braids, plaits, laces, and willow sheets or squares to those composed wholly of the enumerated materials. In accordance with that construction, straw lace sewed or bound with cotton thread of small relative cost was held not made wholly of straw and therefore excluded from the provision. (Schmitz *v.* U. S., 146 Fed. 127; also G. A. 6364 (T. D. 27343).) But a small amount of cotton thread used only for temporarily tying the ends of braids to prevent them from unraveling was held not sufficient to remove the articles from the provision for braids wholly of straw. U. S. *v.* Schiff, 145 Fed., 1023, affirming 140 Fed. 63; U. S. *v.* Bacharach, *supra,* was distinguished and rectangular strips about 18 by 32 inches in dimensions, commercially known as "plaits" or "wide braids," were held dutiable as straw braids or plaits suitable for making or ornamenting hats and not as hats partly manufactured.

Miniature Mexican hats about 3 inches in diameter, made of straw and trimmed with colored cords, held dutiable as manufactures of straw. (G. A. 4153 (T. D. 19414).)

bonnets, and hoods, the bodies composed wholly of straw, chip, ılm leaf, willow, osier, or rattan, or of a combination of these ces in chief value, held, if trimmed, dutiable at 50 per cent em, irrespective of the value of the trimming as compared e value of the article without the trimming. (G. A. 4525 1502); G. A. 5734 (T. D. 25440).)

na straw hats with stitched-leather lining or sweatbands and r use except that they were without the outer crown band r other material were held dutiable as trimmed and not as ıed hats. (G. A. 4841 (T. D. 22727).)

an hats of plaited and braided bleached or unbleached and colored straw, the base of the crown and outer border of the ing trimmed with wide ornamental bands of the same or material as the body of the hats, held dutiable as trimmed as untrimmed hats. (G. A. 4842 (T. D. 22728).)

hats, so-called, held to be untrimmed hats composed of grass (Abstract 23388 (T. D. 30645).)

ux circular in form and slightly convex, but nearly flat in ith the appearance of plain, round mats of braided straw ıout the crown and untrimmed, the material of which was y the evidence to be so constructed as to permit of being into hats without adding any new material, and practically or any other purpose, were held dutiable as hats composed partly manufactured and untrimmed. This classification ıanged by the use of two plateaux in the making of a single chiff *v.* U. S. 2 Ct. Cust. Appls., 89 (T. D. 31634), affirming 81 (T. D. 27718).)

sheets or squares, one surface of which is composed of narrow willow, called chip, and the other surface of bleached cotton d dutiable as manufactures of chip and not as willow sheets es composed wholly of chip straw, etc. (G. A. 4152 (T. D. see also Abstract 21299 (T. D. 29790).)

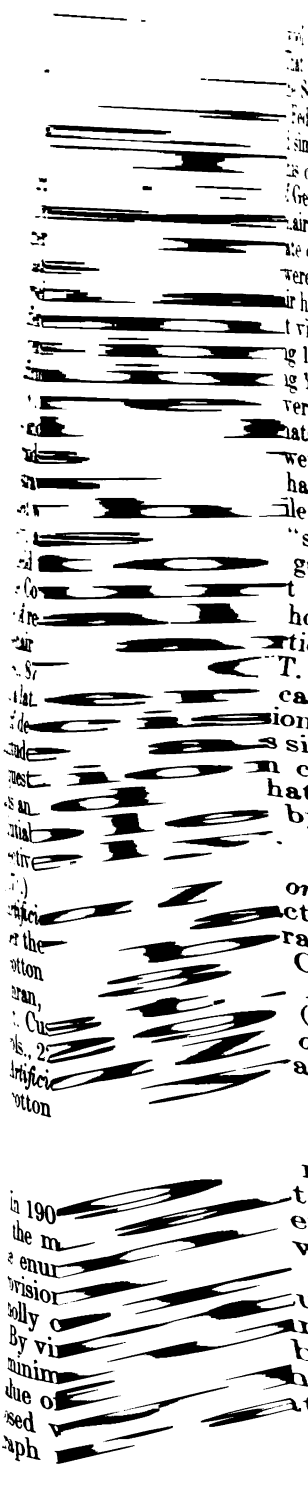
for hats, bonnets, or hoods composed wholly of dyed chip and ited straw held to be "in its natural form and structure," leaned, split, and plaited. (G. A. 4617 (T. D. 21861).)

net or nettings cut into narrow strips or small pieces and for use in lining the sides and crowns of hats, being known as strips, and sides, were dutiable as nets or nettings. (G. A. D. 24784).)

fabrics of grass cloth for trimmings and decorations of hats iable as manufactures of vegetable fiber and not as braids of straw or grass in its natural form and structure. G. A. D. 26265).

s in chief value of cotton, ready to be inserted and fastened in e dutiable as partly made wearing apparel of cotton and not factures of cotton. (G. A. 6458 (T. D. 27660).)

was considerable litigation under this act upon hats and mposed of horsehair. In the absence of a specific provision the question was to what enumerated article they bore est resemblance in one or more of the four particulars—quality, texture, or use. At first they were classified by e as articles "composed of wool," by virtue of paragraph ch provided that the word "wool" when used in connection manufactured article of which it was a component material



included "wool or *hair* of the sheep, camel, goat, alpaca, *or other animal*." That construction, however, was overruled by the Circuit Court for the Southern District of New York in Donat *v.* United States (134 Fed., 1023 (T. D. 25113, reversing G. A. 4876, T. D. 22843)) and similitude to silk braids declared the appropriate classification. This classification was followed in numerous decisions by the Board of General Appraisers because of the superior resemblance of the horsehair articles to silk articles and because of the rule that the higher rate of duty controls in cases of equal similitude. Horsehair braids were accordingly treated for tariff purposes as silk braids and horsehair hats as silk wearing apparel.

A different view was taken in Paterson *v.* United States (166 Fed., 733, reversing 159 Fed., 320); United States *v.* Rheims Co. (175 Fed., 778, affirming 169 Fed., 662); and Wanamaker *v.* United States (175 Fed. 900, reversing 169 Fed., 664). In these cases similitude to straw braids and hats was held to be the correct classification. Horsehair hat braids were declared to resemble silk hat braids more closely than straw hat braids, but straw hat braids were specifically enumerated while the silk articles were given only a generic enumeration, namely, as "silk braids"; mere specificity rather than resemblance was held to govern.

The Court of Customs Appeals refused to follow this reasoning. Hats of real horsehair were held to bear a closer similitude to artificial horsehair articles than to straw hats. (U. S. *v.* Buss, 3 Ct. Cust. Appls., 87 (T. D. 32357).)

In a later case the Board of General Appraisers followed its original line of decisions and held that horsehair braid hats were dutiable by similitude as silk wearing apparel. (G. A. 7373 (T. D. 32617).) When the question came again before the Court of Customs Appeals such braids and hats were held upon the record in the particular case to be dutiable by similitude to silk braids and silk wearing apparel, respectively. (Zimmermann *v.* U. S., 5 Ct. Cust. Appls., 104 (T. D. 3137).)

Artificial or imitation horsehair braids and hats were also an issue under the act of 1897. They were held to be dutiable by similitude cotton braids and cotton wearing apparel, respectively. (U. S. *v.* Schran, 3 Ct. Cust. Appls., 57 (T. D. 32349); Plummer *v.* U. S., Ct. Cust. Appls., 229 (T. D. 32539); Isler *v.* U. S., 5 Ct. Cust. Appls., 229 (T. D. 34401).)

Artificial or imitation horsehair in skeins or yarn was held dutiable cotton yarn by similitude. (U. S. *v.* Eckstein, 222 U. S., 130.)

ACT OF 1909.

In 1909 real horsehair, Cuba bark, and manila hemp were added the materials for braids, etc., but horsehair was not included in enumeration of materials for hats, bonnets, and hoods. The vision was extended to include braids, etc., when composed either olly or in chief value of any of the enumerated materials.

By virtue of the provision in paragraph 347 of that act, prescribing minimum rate of duty, hats and hoods composed wholly or in chief ue of braids of ramie were held properly dutiable as articles com-ed wholly or in chief value of vegetable fiber under that para-ph rather than as wearing apparel wholly or in chief value of

r other vegetable fiber under paragraph 324. (G. A. 737
2583), of 1912.)
rovision for straw hats trimmed was limited by the Treasury
ient to such as, including the trimming, were composed ir
lue of straw. (Department order, T. D. 31794.)
ourt of Customs Appeals construed the provision to exclude
ming in determining the component of chief value. (U. S.
4 Ct. Cust. Appls., 322 (T. D. 33521), affirming G. A. 7415
3086), and distinguishing Rheims Co. *v.* U. S., 160 Fed., 925,
the phrase "composed wholly or in chief value" in the pro-
the act of 1897 for "hats * * * trimmed or untrimmed
composed wholly or in chief value of the fur of the rabbit,
or other animals" to relate to both trimmed and untrimmed
l to require the trimming to be considered in determining
ponent of chief value.)
ished hat sweatbands, consisting of the grain side of a sheep-
t in the pickled state and tanned, dressed, and finished and
s "skivers," were held dutiable as "sheepskins dressed and
" or as "other leather" paying the same rate of duty and
split leather." (Tilge *v.* U. S., 2 Ct. Cust. Appls., 129 (T. D.
affirming G. A. 7134 (T. D. 31131).)
veats consisting of leather cut to form and ready to be sewed into
ts as sweatbands were held dutiable as manufactures of leather.
U. S., 3 Ct. Cust. Appls., 97 (T. D. 32360), affirming Abstract
T. D. 31450).)
na hats undervalued in the invoice and sent to general-order
unclaimed were held subject to forfeiture, notwithstanding
y was made. When unloaded and placed in general-order
ney were introduced into the commerce of the United States
he meaning of subsection 9, section 28, act of 1909, which
fraudulent invoices made by consignors in foreign countries.
25 Packages of Panama Hats, 231 U. S., 358.)
invoiced as trimmed hats and not shown by the testimony of
witness to consist of trimmed straw hats held dutiable as
ring apparel at 60 per cent ad valorem under paragraph 402,
909, and paragraph 390, act of 1897. (Schmitt *v.* U. S., 5 Ct.
ppls., 312 (T. D. 34523), affirming Abstract 33841 (T. D.

nings 4 inches wide and 1 yard in length, in chief value of straw,
d dutiable under paragraph 422, and not as manufactures of
nder paragraph 463. (U. S. *v.* Ascher Co., 5 Ct. Cust. Appls.,
ersing upon stipulation Abstract 33763 (T. D. 33778) and
ng Abstract 25927 (T. D. 31720).)
made of manila hemp braids, having crowns about 5 inches
l brims measuring between 4 and 5 inches in width, the
ge of the brims having a wire fastened thereto giving firmness
rims and keeping them in the desired shape, the wire being
by black velvet, also used to face or cover the under side of
s, the hats only requiring the insertion of a lining and final
of the brims to make them ready for use, were held dutiable
ed hats at 50 per cent ad valorem under paragraph 422, and
ntrimmed hats at 35 per cent under that paragraph. When
shaped and trimming applied to it, even though such trim-

is very simple, the hat is no longer an untrimmed hat within
ening of the statute. (G. A. 7461 (T. D. 33407).)
d trimmings made from *split straw, some braided or plaited* held to
dutiable as manufactures of straw at 35 per cent ad valorem
r paragraph 463 and not as trimmings composed of vegetable
r under paragraph 349. (G. A. 7469 (T. D. 33510).)
bleached willow sheets with *bleached muslin backs pasted thereto,*
he chief value, were held dutiable as willow sheets unbleached.
stract 24325 (T. D. 31103).)
Hat's hat or bonnet with a cotton or buckram frame or foundation
ered and lined with silk and trimmed with silk ties and rosettes
d fancy straw lace, was held dutiable under paragraph 402 as silk
aring apparel and not under paragraph 422 as a hat or bonnet in
of value of straw. (Abstract 24994 (T. D. 31352).)
Plaits invoiced as laced hemp bands, imported in pieces measuring
eral yards in length and from 5 to 30 centimeters or more in width,
re held dutiable as plaits wholly or in chief value of bleached,
ed, colored, or stained manila hemp and not as manufactures of
emp. (Abstract 25927 (T. D. 31720); followed in Abstract 31626
T. D. 33263).)
Merchandise known in trade as leghorn strips, leghorn braids, or
eghorn plaits and classified as manufactures of straw held dutiable as
unbleached straw plaits. (Abstract 28369 (T. D. 32488).)
Braids composed of chip and straw held dutiable at 15 per cent
under paragraph 409 and protest claiming 20 per cent under the same
paragraph held sufficient. (Abstract 30728 (T. D. 33018).)
Grass cloth consisting of manila hemp or grass sheets unbleached,
suitable for making or ornamenting hats, held dutiable under the
first part of paragraph 422. (Abstract 30819 (T. D. 33031).)
Merchandise invoiced as natural straw bands was held dutiable as
manufactures of straw at 35 per cent ad valorem under paragraph 463, and not
at 15 or 20 per cent ad valorem under paragraph 422. These bands
were declared neither braids nor laces but ornaments or trimmings
of straw, and not dutiable as vegetable fiber trimmings because the
phrase "articles made of straw in its natural form and structure"
does not include articles made of vegetable fibers. (Abstract 32985
(T. D. 33560).)
Raffia bands composed of grass ornamented on one side with a floral
design in colors were held dutiable as plaits or straws composed of
palm leaf under paragraph 422. (Abstract 32949 (T. D. 33587).)

ACT OF 1913.

The only change made in 1913 was to class bleached hats with
trimmed hats and to reduce the duties on hats unbleached or un-
trimmed from 35 to 25 per cent ad valorem and on hats bleached or
trimmed from 50 to 40 per cent.

Silk hatbands were continued as headings in the paragraph (par. 1115)
with ribbons, bellings, headings, etc., of silk or silk velvet. The pro-
vision was also continued for untrimmed hat bodies of silk plush (par. 1116)
free list). Yarns, threads, or filaments of artificial or imitation straw,
hair are made dutiable in paragraph 1114 at 45 per cent ad valorem,
and articles or fabrics wholly or in chief value of artificial or imitation

horsehair or of yarns, threads, filaments, or fibers of artificial or imitation horsehair and india rubber at 60 per cent ad valorem.

Straw hats trimmed with silk artificial flowers and ornamental feathers are dutiable at 60 per cent ad valorem under paragraph 347 as articles composed in chief value of feathers or flowers and not under paragraph 335 which, in so far as it relates to straw hats, is framed to make the trimmed hat an entity for determining whether, when trimmed, it is still composed in chief value of the materials therein named. (Aitken *v.* U. S., 6 Ct. Cust. Appls. 232 (T. D. 35468), affirming Abstract 37197.)

Unblocked and untrimmed hats of thin narrow shavings of bamboo held dutiable as hats of chip, not blocked or trimmed under paragraph 335 and not as manufactures of wood under paragraph 176. (Isler *v.* U. S., 7 Ct. Cust. Appls. 178 (T. D. 36503), affirming Abstract 37056 (T. D. 25000)).

Untrimmed hats made from pieces of buckram so cut and shaped as to make the separate pieces suitable for use as crowns, sides, or brims of hats, and which, after being covered with straw, are then fastened or sewed together by hand or machine, the completed article deriving its shape or form during the process of uniting the separate pieces of buckram together and not by the process of blocking, are dutiable, being in chief value of straw, at 25 per cent ad valorem under paragraph 335 and not as blocked hats at 40 per cent ad valorem. (In re Gage, G. A. 7996 (T. D. 36849)).

Merchandise classified as artificial silk braids under paragraph 319 was found to be composed in chief value of straw and dutiable accordingly under paragraph 335. (In re Comey & Johnson Co., Abstract 37005.)

Hemp braids not bleached, colored, or stained held dutiable at 15 per cent ad valorem under paragraph 335. (In re American Shipping Co., Abstract 37909.)

Hats from Mexico held to be dutiable on the appraised value in default of proof to the contrary, it not being the function of the Board of General Appraisers to conduct the case and produce evidence as requested by the importer. (In re Wyman, Abstract 38135.)

Manila hemp braids, classified as bleached, were found not to be bleached, dyed, colored, or stained and were accordingly dutiable at 15 per cent instead of 20 per cent under paragraph 335. (In re Steeb, Abstract 39160.)

Panama hats, in the absence of proof whether or not they were blocked and trimmed, held to be dutiable as trimmed hats as classified under paragraph 335. The appraising officer was without the authority to amend his appraisement and reduce the value from $10 to the entered value of $6. (In re Evans, Abstract 39256.)

Straw hat linings made of cotton netting, paper, and satin were classified as linings in part of cotton net at 60 per cent ad valorem under paragraph 358. In default of proof as to the component material of chief value, the protest claiming the rate of 30 per cent ad valorem under paragraph 256 or 25 per cent under paragraph 332 was overruled. (In re Valentine Hat Co., Abstract 40477.)

So-called wood shaving cloth, classified as manufactures of cotton at 30 per cent ad valorem under paragraph 266, was declared to be properly classifiable as unbleached willow squares used for making

hats under paragraph 335, but as that claim was not made by the importer the protest was overruled. (In re American Import Co., Abstract 40785.)

Ornaments consisting of strands of natural straw twisted together loosely and looped and tied, used as centerpieces in the crowns of straw hats, forming the starting points, were held dutiable as manufactures of straw at 25 per cent ad valorem under paragraph 368 and not at 60 per cent as artificial leaves under paragraph 347. (In re Zimmermann Co., Abstract 40979; Abstracts 21933, 40699, and U. S. *v.* Dieckerhoff, 4 Ct. Cust. Appls. 384 (T. D. 33796), followed.)

(In United States *v.* Dieckerhoff, small pieces of wax in the shape and color of fruit or vegetables, with a loop of ribbon attached as a handle, forming a part of the equipment for sewing baskets, were held to be dutiable at 25 per cent as manufactures of wax under paragraph 462, act of 1909, and not at 60 per cent ad valorem as artificial fruits under paragraph 438.)

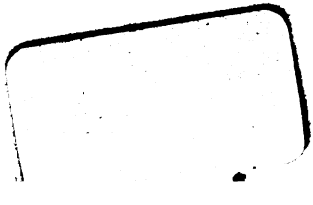
Braids in chief value of manila hemp were held dutiable at the appropriate rate of 15 or 20 per cent ad valorem under paragraph 335 and not at 60 per cent ad valorem as composed in chief value of artificial silk under paragraph 319 or 358. (In re Bertrose Co. et al., Abstracts 41345, 41541, 41663.)

Braids in chief value of straw, dyed, colored, or stained held dutiable at 20 per cent ad valorem under paragraph 335 and not at 60 per cent as of silk chief value under paragraph 358. (In re Judkins, Abstract 41545.)

Unblocked and untrimmed hats made of thin narrow shavings of bamboo are dutiable as hats of chip, not blocked or trimmed, under this paragraph, and not as manufactures of wood under paragraph 176. (Isler *v.* United States, 7 Ct. Cust. Appls. 178, of 1916, followed in Abstract 40385, of 1916.) *Straw hats* of "Alpine" shape, known as "bodies," which have been placed upon a zinc brim form and subjected to slight hydraulic pressure in order to bring their brims to the proper widths according to style and demand, but which must yet be subjected to a blocking process by which they are stiffened with suitable sizing and pressed into permanent shape and conventional sizes, are not blocked. (Donat *v.* United States, 9 Ct. Cust. Appls. 169, of 1919; followed in Abstract 43797.) *Untrimmed straw hats* which have derived their shape and style by knotting the straws together with thread over a form are not blocked hats within the meaning of the statute, the provision for blocked hats embracing only such hats or hat bodies as have been subjected to the blocking process by placing the hats or bodies on a block or form and then manipulating them so as to give them the required form and style. (G. A. 8279, T. D. 38092, of 1919.) *Untrimmed hats made from pieces of buckram* so cut and shaped as to make the separate pieces suitable for use as crowns, sides, or brims of hats and afterwards covered with straw, then fastened or sewed together by hand or machine, the completed article deriving its shape or form during these processes and not by a process of blocking, are not dutiable as blocked hats, but as hats not blocked, under this paragraph. (G. A. 7996, T. D. 36849, of 1916, followed in Abstract 40870, of 1917, and G. A. 8161, T. D. 37607, of 1918.) *Untrimmed straw hats* with high crowns and wide brims so limp and pliable that they

do not retain any particular shape were held not to be blocked. Although made over a block to give the necessary size to the crowns, they had to be put through a further process of blocking in order to give them size and shape. (Abstract 40006, of 1916.) *Unblocked and untrimmed hats made of manila hemp, braids, cords, rings, and threads* into a finished article of coarse open work having the appearance of Renaissance lace are dutiable under the provision of this paragraph for "hats * * * composed wholly or in chief value of * * * manila hemp," that provision being more specific than the provision in paragraph 358 for "wearing apparel * * * made wholly or in part of lace or of imitation lace of any kind * * * of whatever yarns, threads, or filaments composed." (G. A. 8098, T. D. 37358, of 1917.) *Trimmed straw hats* with the trimming composed of silk, artificial flowers, and ornamented feathers, the two latter elements predominating, were held dutiable under paragraph 347 rather than under this paragraph, the trimmings controlling the classification. This paragraph, in so far as it relates to straw hats, makes a trimmed hat an entity for determining whether it, when trimmed, is still composed in chief value of the materials therein named. (Artken *v.* United States, 6 Ct. Cust. Appls. 232, of 1916.) So-called "*wood shaving cloth*" was found to be *bleached willow squares* used for making hats and dutiable under this paragraph rather than as manufactures of cotton under paragraph 266. (Abstract 40785, of 1917.) *Hemp chenille*, made by twisting two threads of cotton together and intertwining crosswise threads of hemp, used in the manufacture of hat braids, was held dutiable under paragraph 284 rather than this paragraph. (Abstract 43241, of 1919, followed in Abstract 43439, which was affirmed in T. D. 38372, of 1920; followed in Abstracts 43831 and 43862, of 1920.)

There are different rates of duty on hat braids that are bleached and those that are not bleached or dyed, but the rate is the same on hats dyed or bleached wholly or in part and hats not dyed. The rates are also the same on hats that are partially blocked and those that are not.



UNITED STATES TARIFF COMMISSION

WASHINGTON

RIFF INFORMATION SURVEYS

ON THE ARTICLES IN

ARAGRAPH 333 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

EADS, JEWELRY, AND PRECIOUS AND SEMI-PRECIOUS STONES

raph 167:
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raph 333:
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Glazier's and Engraver's Diamonds

Paragraph 520:
Jet, Unmanufactured

REVISED EDITION

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PREFACE.

s is one of a series of Tariff Information Surveys prepared by nited States Tariff Commission and transmitted to the Com- e on Ways and Means. The series covers all of the articles ommodities provided for in the tariff act of October 3, 1913, thers not specifically provided for. It is arranged in the rical order of paragraphs of that act.

some cases two or more paragraphs have been combined in amphlet. In doing this, industrial relationship of the articles een followed when possible. In those instances where a para- has been treated under a preceding paragraph of the tariff eference is made to this fact at the point where the paragraph urs in numerical order. Where one grade of an article is dutiable nother grade of the same article is on the free list, the article scussed under the dutiable paragraph, which appears first in rical order in the tariff act. In certain instances articles of industrial relationship and which occur in separate paragraphs e tariff act have been combined under one paragraph for con- nce of discussion. Reference is made to this fact at the point e the commodities would naturally occur in numerical order.

e first pamphlet in the series is an "Introduction and Index," n contains:

An introductory chapter discussing the scope of the series and eneral method of treatment.

An alphabetical index of the articles provided for in the tariff f 1913, showing the paragraph of the act in which the article ovided for and, if discussed under a different paragraph, the ber of such paragraph.

A list of the pamphlets in the series, showing the paragraphs articles included in each pamphlet.

us by use of this "Introduction and Index," the exact location ie discussion relating to a given article or commodity can be tained.

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the preparation of this report the Tariff Commission had the ces of Guy G. George, of the Commission's staff, with relation ads, and of S. L. Willis, of the Metals Division of the Commis- s staff, with relation to jewelry and precious stones, and of rs.

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BEADS, JEWELRY, AND PRECIOUS STONES.

BEADS AND SPANGLES.

SUMMARY.

ads, spangles, and ornaments, as well as other articles composed
ly or in part of beads and spangles, are included in one para-
ı, acts of 1894, 1897, 1909, and 1913. Since 1894 there has been
at increase in the variety of beads and spangles imported and
ange of prices has been greatly extended. It is contended that
articles should now be reclassified for tariff purposes. Small
" beads and cheap toy necklaces, for example, should not be
ed as manufactures of beads. Some think that loosely strung
s without a clasp are not finished articles and should not be
ired to pay duty as such; that imported beads of all kinds and
tones should be admitted at a low rate of duty, to enable domestic
lry manufacturers to compete with foreign establishments in the
stic market. The domestic production for most of the articles
ot sufficient to satisfy requirements under normal conditions.
foreign products appear, as a rule, to be of better workmanship
more desirable than the domestic.
ıt little machinery is used in the manufacture, and foreign estab-
ıents have the advantage of cheap labor. Nearly 70 per cent
e imports in 1918 came from France. Since 1914 there has been
increase in the domestic manufacture.

GENERAL INFORMATION.

1913 TARIFF PARAGRAPH.

ıR. 333. "Beads and spangles of all kinds, including imitation
l beads, not threaded or strung, or strung loosely on thread for
ity in transportation only, 35 per centum ad valorem; curtains,
other articles, not embroidered nor appliqued and not specially
ided for in this section, composed wholly or in chief value of
ls or spangles made of glass or paste, gelatin, metal, or other
erial, 50 per centum ad valorem."

DESCRIPTION.

he latest definition of "bead" in litigation is "a little perforated
re, ball, cylinder or the like, usually strung on a thread or attached
fabric for decoration." (G. A. 8356, T. D. 38452.)
spangle is a small plate or bar of shining metal or other material
l as an ornament, especially when stitched on the dress.
rtificial pearls are manufactured in a variety of ways. Some are
es of thin opaline glass, filled with gum or wax, and deadened

on the surface by means of hydrofluoric acid. The better kinds are glass globules lined with a nacreous composition formed by digesting the silvery scales of the bleak (a fish) in ammonia. Roman pearls are glass spheres, to which the nacreous material is applied externally. Celluloid, incorporated with fish scales, has become a favorite material for artificial pearls. Black pearls have been imitated by beads of a very compact plumbago luster. Pink pearls are frequently confounded with beads or pale coral.[1]

Materials.—As indicated by the list of the different kinds of beads, pearls, etc., various materials are used, but glass and metals predominate.

Methods of production.—Of the products covered by paragraph 333, artificial pearls are in most popular demand. They are manufactured by coating the interior of hollow glass beads with essence d'Orient; coating a solid glass bead with the same material and coating metal beads with a celluloid varnish. The hollow glass beads are sometimes filled with wax. Spangles are made of gelatine, metal, or other material, which is cut into small disks and then colored.

Most of the articles are made largely by hand, very little machinery being used. Since the decrease in imports, due to the war, a new process has been patented which enables the use of machinery in the manufacture of beads, and has apparently cheapened the price of the artificial pearls.

It is contended by the domestic producers that cheaper labor enables the foreign manufacturers to compete successfully in the domestic market, especially in the production of glass beads. Difference in the price of materials does not appear to be an important factor in foreign competition.

Domestic production.—There are no statistics of domestic production. The manufacture of glass, metal, and composition beads is largely an adjunct of other industries and the data for them have never been separated. The Federal census of 1914 gives separate totals for 19 establishments engaged primarily in "beadwork," i. e., the manufacture of bead and glass necklaces, beaded bags, collars, lamp shades, and novelties. The products for the year were valued at $1,083,000. The industry is largely concentrated in New York City. Since 1914 there has been an increase in the production of some varieties of beads especially wood, celluloid, vegetable ivory, and glass. The domestic production, however, is very small as compared with the imports and by no means satisfies the demand. The demand depends largely on fashion, especially for the glass ornaments.

Domestic exports.—Very few, if any, of the articles covered by paragraph 333 are exported.

Foreign production.—The industry, especially the manufacture of glass beads (imitation pearls), has been long established in France, Germany, Austria, Italy, and Japan, but there are no reliable statistics of the quantity or value of the annual production in any of these countries.

Imports.—The statistics of imports for consumption are shown separately for "beads and spangles," and "curtains and other articles not specially provided for of beads and spangles." The general imports, by countries are shown under "beads and bead ornaments."

[1] Dictionary of Applied Chemistry, Thorpe.

lue increased up to and including 1914 when it amounted to 941. Since then there has been a decrease and in 1918 they ted to $1,728,337, of which $1,208,567 came from France. 9, calendar year, the imports increased to $6,330,909, and for o $12,544,581. This appears to confirm the opinion of manu- rs and importers that imports would increase with the resump- normal conditions.

domestic manufacturers are not equipped to produce suffi- o meet normal requirements, and the foreign establishments to have the advantage both in the cost of production and ality of the products.

petitive conditions.—The manufacture requires a great deal dwork, and this is the principal reason why it has not devel- n the United States. It is the consensus of opinion that present industrial conditions the domestic manufacturers t compete successfully with the foreign establishments. The ry in foreign countries, especially in Italy, Germany, Austria, rance has the advantage of an old organization. Some of the ses are carried on in the homes of the operators and the work sed on to succeeding generations. Since 1914 machinery has sed to some extent in the United States, and will possibly en- he domestic manufacturer to compete in some lines.

Beads and bead ornaments—Imports by countries (fiscal years).

ported from—	1910	1911	1912	1913	1914	1915
	$587,487	$501,722	$1,051,101	$908,179	$819,725	$423,876
	337,071	364,027	490,626	521,292	555,595	275,564
Hungary	242,091	249,400	301,086	394,438	753,056	309,726
	16,406	17,525	21,968	23,406	29,367	26,210
	5,559	4,950	11,547	8,197	5,574	4,409
	41,857	26,128	28,941	23,139	22,624	36,196
tal	1,230,471	1,163,752	1,905,269	1,878,651	2,185,941	1,075,981

ted from—	1916	1917	1918	1918 [1]	1919 [1]	1920 [1]	1921 [2]
	$156,055	$1,184		$281	$397,913		
	552,424	1,216,689	$1,208,567	1,061,620	3,353,445		
Hungary	31,663	5,643			724,703		
	35,340	136,960	243,937	281,885	954,238		
	5,475	97,420	216,733	140,725	632,952		
	50,005	149,491	104,043	26,321	267,658		
tal	830,962	1,607,387	1,773,280	1,510,832	6,330,909	$12,544,581	$4,354,700

[1] dar years.
[2] 6 months of calendar year.

Beads and bead ornaments—Imports for consumption—Revenue.

[Beads and spangles of all kinds, not threaded or strung, or strung loosely on thread for facility in transportation only.]

Fiscal year.	Rate of duty.	Quantity.	Value.[1]	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1908	35 per cent		$114,153	$39,952		35.00
1909	do		136,098	47,633		35.00
1910	do		311,692	109,092		35.00
1911	do		453,078	158,575		35.00
1912	do		582,319	203,808		35.00
1913	do		643,936	225,377		35.00
1914	do		1,185,495	414,923		35.00
1915	do		728,685	255,039		35.00
1916	do		410,063	143,522		35.00
1917	do		740,482	259,168		35.00
1918	do		868,748	304,061		35.00
1919	do		1,707,304	597,556		35.00
1920	do		6,844,784	2,396,418		35.00
1920[2]	do		7,240,570	2,521,229		35.00

[1] Includes imports from Cuba and Philippine Islands, which, however, have been negligible.
[2] Calendar year.

Beads and bead ornaments—Imports for consumption—Revenue.

[Curtains and other articles not embroidered or appliqué, n. s. p. f., composed wholly or in chief value of beads or spangles made of glass or paste, gelatin, metal, or other material.[1]]

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1908	60 per cent		$421,012	$252,605		60.00
1909	do		471,867	283,117		60.00
1910	do		910,784	546,469		60.00
1911	do		704,009	422,386		60.00
1912	do		1,297,614	778,568		60.00
1913	do		1,216,472	729,883		60.00
1914[2]	do		463,332	277,999		60.00
1914[3]	50 per cent		535,162	267,581		50.00
1915	do		333,857	166,928		50.00
1916	do		432,096	216,048		50.00
1917	do		876,641	438,320		50.00
1918	do		859,589	429,794		50.00
1919	do		686,691	343,345		50.00
1920	do		3,472,460	1,736,230		50.00
1920[4]	do		4,575,372	2,287,676		50.00

[1] Fabrics, nets or nettings, laces, embroideries, galloons, wearing apparel, ornaments, trimmings curtains, fringes, and other articles, n. s. p. f. composed wholly or in part of beads, or spangles made of glass or paste, gelatin, metal, or other material, but not composed in part of wool. (Acts of 1897 and 1909.)
[2] From July 1 to Oct. 4, 1913.
[3] From Oct. 4, 1913, to July 1, 1914.
[4] Calendar year.

Beads and bead ornaments—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	396	Beads and bead ornaments of all kinds, except amber	50 per cent.
1890	445	Glass beads, loose, unthreaded or unstrung	10 per cent.
1894	354	* * * manufactures known commercially as bead, beaded or jet trimmings or ornaments.	35 per cent.
1897	408	Beads of all kinds, not threaded or strung * * *	Do.
1909	421	Beads and spangles of all kinds, including imitation pearl beads, not threaded or strung, or strung loosely on thread for facility in transportation only * * * .	Do.
1913	333	Beads and spangles of all kinds, including imitation pearl beads, not threaded or strung, or strung loosely on thread for facility in transportation * * * .	Do.

Curtains and other articles of beads or spangles n. s. p. f.—Rates of duty.

Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
396	Beads and bead ornaments of all kinds, except amber.....	50 per cent.
445	Glass beads, loose, unthreaded or unstrung.....	10 per cent ad valorem.
354	* * * manufactures known commercially as beads, beaded or jet trimmings or ornaments.	35 per cent.
408	* * * fabrics, nets or nettings, laces, embroideries, galloons, wearing apparel, ornaments, trimmings and other articles not specially provided for in this Act, composed wholly or in part of beads or spangles made of glass or paste, gelatin, metal, or other material, but not composed in part of wool.	60 per cent.
421	* * * fabrics, nets or nettings, laces, embroideries, galloons, wearing apparel, ornaments, trimmings, curtains, fringes, and other articles not specially provided for in this section, composed wholly or in chief value of beads or spangles made of glass or paste, gelatin, metal, or other material, but not in part of wool. Provided, That no article composed wholly or in chief value of beads or spangles made of glass, paste, gelatin, metal, or other material shall pay duty at a less rate than is imposed in any paragraph of this section upon such articles without such beads or spangles.	Do.
333	* * * curtains, and other articles not embroidered nor appliques and not specially provided for in this section, composed wholly or in chief value of beads or spangles made of glass or paste, gelatin, metal, or other material.	50 per cent.

COURT AND TREASURY DECISIONS.

'tains composed in chief value of glass or rice paste beads, strung
;ton threads suspended from a horizontal bar or rod, are dutiable
urtains * * * composed wholly or in chief value of beads"
this paragraph. The language "curtains, and other articles,
nbroidered nor appliquéd" in this paragraph does not exclude
rticles as are not susceptible of being embroidered or appliquéd.
ed States *v.* Morimura, 7 Ct. Cust. Appls., 285, of 1916.) Curtains
b's-tear seeds are dutiable by similitude to curtains of beads
this paragraph. (T. D. 36656, of 1916.) Artificial flowers,
, and stems made of beads with the aid of wires and silk thread,
g the size, form, color, and outline of natural flowers, are dutiable
paragraph 347 as "artificial and ornamental * * * leaves,
rs, and stems, or parts thereof, of whatever material composed,"
r than as beaded articles under this paragraph. (United States
erican Bead Co., 9 Ct. Cust. Appls., 27, of 1918.) Ornaments and
ings consisting of beads on a net foundation, beads chief value,
ore specifically provided for under this paragraph as articles
ppliquéd, composed wholly or in chief value of beads, than under
raph 358 as ornaments or trimmings of whatever yarns, threads,
aments composed. An article is appliquéd within the tariff
when it is ornamented with a pattern or design independently
ated. (Loewenthal *v.* United States, 6 Ct. Cust. Appls., 209,
13.) Silk netting ornamented with beads and spangles, the
g being more valuable than either and less valuable than both,
iable as "composed wholly or in chief value of beads or spangles"
this paragraph and not as "trimmings * * * of what-
yarns, threads, or filaments composed" under paragraph 358.
ed States *v.* Gavin, 7 Ct. Cust. Appls., 292, of 1916.) Necklaces
or without base metal clasps, in chief value of beads, the beads
made of wood, gelatin, or paste and china or colored glass,

some in imitation of jet and amber, are dutiable as articles in chief value of beads under this paragraph and not as jewelry under paragraph 356. (American Bead Co. *v.* United States, 7 Ct. Cust. Appls., 18, of 1916.) Necklaces substantially of imitation jet beads with imitation jet pendants are not dutiable as jewelry under paragraph 356, but as beaded articles under this paragraph. (Wolff & Co. *v.* United States, 7 Ct. Cust. Appls., 156, of 1916.) Beaded necklaces are not necessarily jewelry, and articles of personal adornment only are not necessarily jewelry. The jewelry paragraph 448 of the tariff act of 1909 embraced imitation amber; the jewelry paragraph, 356 in the tariff act of 1913 does not. (American Bead Co. *v.* United States, 7 Ct. Cust. Appls., 161, of 1916.) Necklaces in chief value of paste beads are not dutiable as jewelry under paragraph 356, but as manufactures in chief value of paste beads under this paragraph. (Bloomingdale *v.* United States, 8 Ct. Cust. Appls., 314, of 1918.) Imitation pearl beads strung temporarily upon flimsy cotton strings selected and graded as to size so that the beads graduate from the largest in the center to the smallest at either end, are dutiable as "imitation pearl beads * * * strung loosely on thread for facility in transportation only" and not as articles of beads under this paragraph. However useful for trade purposes may be the selecting and grading, the fact remains that the stringing was done for facility in transportation only, as the beads have to be restrung more durably and fitted with clasps before being practical for use as chains or necklaces. (Lorsch *v.* United States, 8 Ct. Cust. Appls., 246, of 1918.)

Beads loosely strung without clasps were held to come within paragraph 333 of the act of 1913. (Abstract 43740.) Necklaces made of wax filled glass imitation pearl beads, permanently strung and fitted with metal clasps and imitation pearl pendants, are classable as jewelry under paragraph 356 and not as articles or beads under paragraph 333. (United States *v.* Woolworth Co., 10 Ct. Cust. Appls.,—; T. D. 38552.) Glass bead girdles valued at more than 20 cents per dozen pieces were held to come within paragraph 333 and not to be dutiable as jewelry. (G. A. 8319, T. D. 38269, of 1920.) Chains, bracelets, hatpins, and necklaces composed in chief value of beads were held to come within paragraph 333. (Abstract 43629.) The following articles were also held under recent decisions to come within paragraph 333: Wooden bead necklaces (Abstract 43758); bone bead necklaces (Abstract 43901); necklaces composed of metal and beads, beads chief value (Abstract 43925); beads of paste composition permanently strung, but without clasps on the string and in appearance simulating a pearl necklace (Abstract 43926); trimmings or ornaments composed of beads, raffia, and cotton, beads chief value (Abstract 43838). But agate rings, $\frac{3}{8}$ of an inch in outside diameter and $\frac{1}{8}$ of an inch in thickness, the opening in each ring being a little more than $\frac{3}{16}$ of an inch in diameter, used as line-guides on fishing rods, were held not to be beads and to be duitable as manufacturers of agate within paragraph 98 of the act of 1913. "Beads" was defined as a little perforated sphere, ball, cylinder, or the like, usually strung on a thread or attached to a fabric for decoration. (G. A. 8356, T. D. 38452.)

Rosaries in chief value of beads were held dutiable as articles made of beads under paragraph 333. (United States *v.* American Express, 8 Ct. Cust. Appls., 157, of 1917.) Coral beads graduated and tem-

ily strung loosely on strings for facility in transportation, suit-
for use in the manufacture of jewelry, are not dutiable as beads
·ticles in chief value of beads under this paragraph, but as
al * * * cut, but not set, and suitable for use in the manu-
re of jewelry," under paragraph 357. (United States *v.* Barti-
9 Ct. Cust. Appls., 180, of 1919.) Coral beads which have been
o final globular shape, pierced, graded, and temporarily strung
.al relation from large to small for use and wear as coral necklaces,
similarly classified. (United States *v.* Bartimoro, 9 Ct. Cust.
s., 183, of 1919.) Christmas tree ornaments consisting of a star
sed in a circle 3 inches in diameter, composed of colored and
red or gilded glass perforated articles strung on metal wires
ng a pendant composed of similar glass articles strung on red
)n strings, and other articles of similar description, were held
·erly classified as beaded articles under this paragraph rather than
ufactures of blown glass under paragraph 84. (Abstract 42364,
)18.) (See pars. 167, 356, 359, and 358.)

1ere has been some uncertainty in the interpretation of the tariff
s for beads and spangles. If they are strung loosely for facility
·ansportation only, the rate is 35 per cent ad valorem, whereas
ıey are strung ready for use, the rate is 60 per cent ad valorem.
often difficult to determine into which classification the product
. Frequently the strands are complete with the exception of the
p, yet pay the lower rate of duty.

rticles in chief value of beads embroidered or appliquéd come
ıin neither this paragraph nor paragraph 358, but under provisions
)rding to the component material of chief value, such as glass.
ission of the words "not embroidered nor appliquéd and" would
)lify administration.

he classification of necklaces has given rise to much litigation.
ı rule they are jewelry when imported strung with a clasp, but
·n made of imitation jet or amber, or of wood, gelatin, paste,
s, or china, whether with or without clasps, they have been held
to be jewelry. A valuable collection of matched pearls used
)ad before acceptance, and imported unstrung, was also held not
)e jewelry.

'he classification of rosaries is also difficult. Three provisions are
ıcipally involved, this paragraph, paragraph 167, and paragraph
. Rosaries having devotional use have been held not to come
ıin paragraph 356, and are dutiable according to the component
hief value. When having a simple metal crucifix, rosaries might
lutiable at 50 per cent under this paragraph, and when having an
)orate crucifix of base metal, at 20 per cent under paragraph 167.

JEWELRY AND RELATED ARTICLES AND PARTS THEREOF.

SUMMARY.

ewelry is the name given to a large class of articles designed to be
·n on the person for purposes of adornment. It is generally made
or in imitation of, the precious metals. A large number of
cles designed to be worn on or carried about the person are classi-
with jewelry in the tariff.

ewelry articles are luxuries and the domestic consumption fluctu-
s in a large measure with general industrial conditions.

The domestic jewelry industry is well organized and efficient, and during the period from 1910 to 1919 the domestic production was generally sufficient to satisfy the domestic market. At times imports exceeded exports but since 1911 exports have predominated. The domestic industry originally manufactured only the best grade of jewelry, depending for its success on the originality of the design used. In recent years the industry has expanded, and now manufactures of all but the cheapest grades, which prior to the war were imported in large amounts and since 1914 have practically disappeared from the domestic market.

The manufacturing process requires a large amount of hand work because the demand for any one article is so unstable that, except for certain stock articles, such as chains, rings, and pin shanks, it would not pay to design automatic machinery for its manufacture. The industry is carried on in small plants to a large extent.

Foreign production.—Germany and Austria, France and England are normally large producers of jewelry. The Central Powers were active competitors with the domestic industry in the United States markets, especially as regards the cheaper grades of jewelry. The French and English industries produce a high quality product. The war shut off the German and Austrian markets entirely and caused large reductions in the jewelry output in England and France.

Competitive conditions.—The domestic industry occupies a very favorable position as regards the manufacture of the high and medium grades of jewelry. Design plays an important part in the sale of this material and as domestic manufacturers change their patterns frequently they are able to hold the market in the face of cheaper foreign competition. The low price of the cheaper flashy jewelry prohibits the expenditure of large sums to jewelry designers. The goods are manufactured in large lots from stock patterns, usually imitations of popular designs of expensive jewelry. The European industry excels in the manufacture of goods of this character, their ability to imitate design, the lower wage scale, and the prevalence of home manufacturing units, combining to make the foreign goods formidable competitors of the domestic article.

Tariff considerations.—The domestic jewelry manufacturing industry is well established and capable of supplying the entire domestic demand for all classes of jewelry. The revenue feature of the tariff situation in this industry is important. The imposition of high duties on these luxury articles may fall wide of the mark if the duties be fixed at rates which eliminate the foreign product from the domestic market.

The very cheap grades of foreign jewelry and novelties valued below the present limits of the jewelry paragraph (20 cents per dozen pieces) are luxuries, since they are used for adornment, and for this reason might be classified with the more expensive grades.

Jewelry and similar articles and parts thereof—Summary table (values).

iscal year.	Domestic production.	Imports for consumption.[1]	Domestic exports.[2]	Ratio of imports to exports.	Amount of duty.[1]	Average equivalent ad valorem rate.
				Per cent.		*Per cent.*
		$1,592,334.29	$1,444,388	110.2	$1,164,525.56	73.2
		1,869,447.93	1,882,698	99.3	1,413,327.51	75.7
		1,144,947.73	1,850,817	60.2	863,906.23	75.5
		998,912.51	1,893,117	52.7	682,514.35	68.3
	[3] $81,006,289	1,082,790.55	1,432,227	75.5	662,283.52	61.1
		537,709.00	933,429	57.6	317,073.52	59.0
		362,977.00	1,694,489	21.4	213,879.22	58.8
		325,693.00	1,783,690	18.25	189,554.00	58.25
		261,395.00	1,519,340	17.2	150,796.68	57.7
3 [3]		204,219.00	1,064,337	19.7	120,142.10	58.80
9 [3]		748,754.00	12,369,235	06.1	444,190.50	59.25

[1] Exclusive of manufactures of silver, largely tableware, but includes manufactures of gold, n.s.p.f.
[2] Includes manufactures of silver, largely tableware.
[3] Calendar year.

Jewelry and related articles, and parts thereof—Summary table.

Fiscal year.	1910	1911	1912	1913	1914
Imports.					
Jewelry	$730,965.90	$692,439.61	$418,315.23	$640,503.95	$699,552.43
Stampings	14,004.07	12,550.98	5,240.87	3,740.00	40,631.00
Chains	137,788.36	111,128.77	44,747.46	12,662.00	9,532.00
Mesh bags	180,899.55	263,389.06	155,888.04	38,522.54	51,189.75
Novelties	523,188.41	786,866.51	510,269.63	288,465.27	256,395.07
Manufactured gold, n.s.p.f	5,488.00	3,073.00	10,486.50	15,018.75	25,490.30
Total	1,592,334.29	1,869,447.93	1,144,947.73	998,912.51	1,082,790.55
Manufactured silver[1]	202,941.49	256,299.32	331,014.14	311,646.29	504,744.98
Grand total	1,795,275.78	2,125,747.25	1,475,961.87	1,310,558.80	1,587,535.53
Revenue.					
Jewelry, etc	1,164,525.56	1,413,327.51	863,906.23	682,514.35	662,283.52
Silver manufactures[1]	91,297.26	113,735.09	148,948.38	138,397.95	245,357.85
Exports[1]	1,444,388.00	1,882,698.00	1,850,817.00	1,893,117.00	1,432,227.00

Fiscal year.	1915	1916	1917	1918	Calendar years.	
					1918	1919
Imports.						
Jewelry	$341,739.00	$232,445.00	$215,397.00	$176,545.00	$147,851.00	$543,998.00
Stampings	19,567.00	8,901.00	10,391.00	4,151.00	4,716.00	18,160.00
Chains	3,178.00	1,360.00	95.00	5.00	----------	210.00
Mesh bags	8,356.00	3,314.00	1,080.00	422.00	5,864.00	288.00
Novelties	130,014.00	86,985.00	51,091.00	24,087.00	26,719.00	[2] 155,449.00
Manufactured gold	34,855.00	29,972.00	47,639.00	56,185.00	19,069.00	30,849.00
Total	537,709.00	362,977.00	325,693.00	261,395.00	204,219.00	748,754.00
Manufactured silver[1]	335,813.00	242,916.00	247,201.00	201,005.00	110,805.00	222,319.00
Grand total	873,522.00	605,893.00	572,894.00	462,400.00	315,024.00	971,073.00
Revenue.						
Jewelry, etc	317,073.52	213,879.22	189,554.60	150,796.68	120,142.10	444,090.50
Silver manufactures[1]	167,705.70	121,458.00	123,569.00	100,439.70	55,393.70	111,159.50
Exports[1]	933,429.00	1,694,489.00	1,783,690.00	1,519,340.00	1,064,337.00	12,369,235.00

[1] Includes considerable quantities of silver tableware.
[2] Expanded as "Articles valued at more than 20 cents per dozen pieces, n. s. p. f."

GENERAL INFORMATION.

TARIFF ACT OF 1913.

Paragraph 356. "Jewelry, commonly or commercially so known, valued above 20 cents per dozen pieces, 60 per cent ad valorem; rope, curb, cable, and fancy patterns of chain not exceeding one-half inch in diameter, width, or thickness, valued above 30 cents per yard; and articles valued above 20 cents per dozen pieces designed to be worn on apparel or carried on or about or attached to the person, such as and including buckles, card cases, chains, cigar cases, cigar cutters, cigar holders, cigarette cases, cigarette holders, coin holders, collar, cuff, and dress buttons, combs, match boxes, mesh bags, and purses, millinery, military, and hair ornaments, pins, powder cases, stamp cases, vanity cases, and like articles; all the foregoing and parts thereof, finished or partly finished, composed of metal, whether or not enameled, washed, covered, or plated, including rolled gold plate, and whether or not set with precious or semiprecious stones, pearls, cameos, coral, or amber, or with imitation precious stones or imitation pearls, 60 per cent ad valorem. Stampings, galleries, mesh, and other materials of metal, whether or not set with glass or paste, finished or partly finished, separate on in strips or sheets, suitable for use in the manufacture of any of the foregoing articles in this paragraph, 50 per cent ad valorem."

Paragraph 167. "Articles or wares not specially provided for in this section: if composed wholly or in part of platinum, gold, or silver, and articles or wares plated with gold or silver, and whether partly or wholly manufactured, 50 per cent ad valorem * * *."

DESCRIPTION.

The jewelry manufacturing industry in the United States produces a wide range of articles, used for adornment or as novelties to be carried on or about the person.

The products of the jewelry industry may be roughly divided into four classes, depending on the raw material used: (1) Wire goods, such as pins, brooches, and rings; (2) chain and mesh goods, such as fancy chains for pendants and watch chains, and mesh bags used for ornamental handbags. These are produced from wire but are more highly manufactured than are the articles in division (1); (3) cast goods, including certain kinds of rings and intricate gem mountings; (4) stamped sheet metal goods used for ornamenting toilet articles and fancy bags, and for match boxes, cigarette and cigar cases, studs, buttons, cuff and collar links, and similar articles. The only specified articles which may require definition are "galleries," which are metal settings for precious stones, and "mesh," a fabric composed of small rings of wire linked together.

In general, any metallic article designed to be worn on the person for the purpose of adornment, whether or not it has a utilitarian use, is known as jewelry.

DOMESTIC PRODUCTION.

The domestic jewelry and novelty manufacturing industry is well established and capable of supplying the entire domestic demand.

Materials.—Ingots of gold, silver, platinum, brass and copper, and ets, strips, and wire composed of or plated with those metals are base from which almost all jewelry is made. Precious, semipre- us, and imitation precious stones are used for ornamentation. tain souvenir jewelry and novelty articles are composed in part shells, horn, ivory, wood, and other materials.

Equipment.—The manufacture of jewelry requires a large amount handwork. All stamped goods are made on hand-operated wer machines, but all dies used are manufactured by highly illed hand labor. All cast material is necessarily made in indi- dual molds, but the polishing of rough castings is usually carried n in power-operated drums. A large amount of the wire and mesh oods are made with automatic machinery, but the finishing is largely andwork.

Methods of production.—The jewelry industry is wholly dependent ıpon the vagaries of fashion, and for this reason, in order to keep ıbreast of competition, designs must be changed frequently. There s, therefore, little advantage in spending large amounts of money to make any one of the manufacturing processes automatic when the article made would be obsolete and have no market in a comparatively short time. Some articles, notably wire rings from which mesh material is made, finger rings manufactured from wire, shanks for stick pins, and certain kinds of gold and silver safety pins, have a sufficiently stable market to be made in large quantities, and automatic machines have been designed for their manufacture. Recently automatic mesh fabricating machinery has been perfected.

In 1914 the domestic industry provided work for 28,289 wage earners, of whom approximately three-quarters were male and one-quarter female. About 650 children of both sexes were employed. The domestic industry is carried on almost exclusively in factories, whereas in Europe large quantities of jewelry are manufactured in the homes of the workers. The large amount of handwork required places producing nations with low wage scales in a very advantageous position.

Organization.—The jewelry industry is well adapted to small manufacturing establishments. The manufacturing processes which permit of large scale automatic operation (manufacture of pins, rings, and fancy chains) are carried on in large factories, but most of the industry is composed of small establishments employing a small number of employees. The census of 1914 gives to the average factory 18 to 19 wage earners. Over $72,000,000 were invested in the industry in 1914, scattered among 1,914 manufacturing establishments.

Geographical distribution.—The jewelry manufacturing industry is concentrated in three localities in the United States—in and about Attleboro, Mass.; Providence, R. I.; and Newark, N. J. The concerns operating in these groups are manufacturers exclusively, and do not enter the retail field. They manufacture stock patterns which enter into competition with foreign articles, and do little or no designing of individual pieces on order.

The jewelry selling industry is concentrated in the various centers of population throughout the United States. The selling concerns, although they are primarily retail organizations, manufacture large amounts of special pieces of jewelry on order from their own or from

customers' designs. The products made are composed of gold and platinum, and stock articles of either foreign or domestic origin can not compete to any extent, because the products are of unique design, and the demand can not be anticipated.

History of the industry.—The domestic manufacturing industry dates back about 50 years. At first the industry was conducted in shops using little or no power or machinery of any kind. During this period, the products were expensive and no standardization was attempted. As the industry became better established, under the high duties ruling during the period from 1890 to 1913, the industry expanded and the variety of the products was increased. It was during this period that the domestic industry first began to manufacture the cheaper, in part, flashy jewelry hitherto manufactured abroad exclusively. These products are now the backbone of the Massachusetts and Rhode Island industry. During the war, the domestic industry expanded further, to take over part of the business previously controlled by the foreign industry, and manufacturers report that during 1919 they were unable to supply the domestic demand.

Domestic production and consumption.—During 1914 the domestic jewelry industry manufactured products valued at over 81 millions of dollars. During the fiscal year 1914 the exports of jewelry and silverware combined exceeded the imports by $150,000, indicating a production in excess of the domestic consumption. Statistics for fiscal years 1910 and 1911 showed an excess of imports over exports. The situation was reversed in 1912 and exports have exceeded the imports during every year, except 1914, up to and including 1919. The war has been an important factor in the growth of domestic exports. German export trade was cut off in 1914, and in the Allied Nations the jewelry industry was forced to curtail operations. In the emergency, the neutral markets were supplied by the domestic jewelry industry.

Domestic exports.—Exports of jewelry have increased steadily since 1910. There was a period of stagnation during 1912 and again during 1915, but on the whole the recoveries were rapid. Exports average more than $1,500,000 per year and during the year 1917 amounted to $1,780,000 in value. Exports have decreased since 1917 due no doubt to the curtailment of domestic production when the United States entered the war. Prior to the war, Canada and South America were the heaviest buyers of domestic jewelry but considerable amounts were exported to France, Germany, and England.

FOREIGN PRODUCTION.

Germany, Austria-Hungary, France, England, and Switzerland are normally large producers of jewelry. The German and Austro-Hungarian industry, specializing in the cheapest grades, was the most active competitor in the domestic market. Imports from Germany and Austria-Hungary were greater than the imports of all other nations combined, averaging over $500,000 yearly and at times exceeding $1,000,000. Imports from France averaged about $400,000 per year and from England about $50,000. With the advent of the war, imports from the Central Powers decreased rapidly and ceased entirely in 1917. The Allied Nations continued to export jewelry

ɔughout the war years but in small amounts. Nineteen hundred
l nineteen figures show an increase over the last war year.
:he general trend of jewelry imports has been downward. The
ır 1914 (fiscal), the only normal year since the duty on novelty
ɨicles was lowered from 85 to 60 per cent, showed an increase of
9,000 over 1913, but during the period 1910 to 1913 imports
ɔcreased from $1,576,000 to $988,000. During the late war years,
ıportations decreased to less than $300,000.

TARIFF HISTORY.

The general tendency of tariff legislation regarding jewelry has ɔeen to increase the duties and to include in the jewelry provision the articles akin to, but not known as, jewelry.

The duties increased from 25 per cent ad valorem in 1883 to 60 per cent on true jewelry and to 85 per cent on novelty articles in 1909. In the tariff act passed in the latter year all articles designed to be worn on or carried about the person, similar to jewelry, were included in the jewelry paragraph but carried duties of 85 per cent, whereas articles known as jewelry were dutiable at 60 per cent. There was considerable litigation due to the involved wording of the paragraph.

The tariff act of 1913 clarified the situation somewhat. The paragraph was made to include all articles known as jewelry when valued at more than 20 cents per dozen pieces, all fancy patterns of chain when valued at above 30 cents per yard, and all the enumerated articles when valued at more than 20 cents per dozen pieces. No limitation was placed on the materials entering into the composition of the articles treated. A duty of 60 per cent was placed upon the finished or partly finished articles, and 50 per cent upon materials such as stampings, galleries and mesh used in their manufacture.

In the act of 1913 it was recognized that practically all articles, except scientific apparatus, composed of gold, silver, or platinum, or plated with those metals, are akin to jewelry. The general basket metal paragraph was divided and a duty of 50 per cent placed upon the manufactures of the precious metals.

COMPETITIVE CONDITIONS.

The domestic jewelry manufacturing industry depends for success, to a considerable extent, upon its ability to create new styles and designs before cheap foreign counterparts of existing designs lower the demand for the domestic product. A wide variety of articles must be manufactured at all times, and with few exceptions the demand for any one class of article is very limited. Originally the domestic industry catered exclusively to the high class trade. The product was in competition with the foreign articles, but in general was composed of more expensive metal, was of more original design, and commanded a higher price. As the industry became better established the variety of articles produced increased to cover certain of the cheaper articles formerly manufactured exclusively abroad. These articles are largely of standardized designs, and the larger volume of sales justify the installation of automatic machinery. The domestic industry manufacturing cheap jewelry, sacrificed the advantage of original design, but has been successful in holding a substantial part of the domestic market.

No attempt was made during the war to manufacture the cheapest grades of jewelry and novelties. As a result, this material disappeared from the market.

TARIFF CONSIDERATIONS.

All articles covered in this survey are in the luxury class. The domestic industry is firmly established. Therefore in determining the tariff treatment to be accorded articles, such as jewelry, which are manufactured in large amounts in the United States, it is to be noted that a high duty may easily result in decreased revenue through the exclusion of the foreign articles.

The cheap articles, at present below the value limit of the jewelry paragraph (20 cents per dozen pieces), should be classed as articles of adornment. The foreign industry is in a better competitive position as regards this class of material because the consumption is heavy, and the value of the finished article is so low that individual design plays little part in the competitive position of the article.

Jewelry statistics, 1914 [1]*—Domestic production.*

Number of establishments	1,914
Capital engaged	$72,403,637.00
Total persons	36,064
Average number wage earners	28,289
Male workers:	
Adult	21,458
Child	481
Female workers:	
Adult	6,397
Child	187
Value of products	$81,006,289.00
Value added by manufacturing	$41,890,153.00
Average wage for year	$662.50

Jewelry—Imports by countries.

Imported from—	FISCAL YEARS. 1910	1911	1912	1913
Austria-Hungary	$504,680	$432,499	$211,466	$191,205
Belgium	1,828	4,624	597	1,931
France	473,784	562,343	410,295	300,239
Germany	435,297	627,405	371,626	352,490
Italy	36,792	37,408	31,382	16,813
Netherlands	6,191	13,713	4,211	885
Spain	2,691	3,884	11,832	12,933
Switzerland	6,002	14,459	25,812	33,385
United Kingdom	72,749	129,270	50,374	33,816
Canada	7,580	11,265	11,620	13,036
Mexico	3,515	10,180	1,916	2,198
Japan	13,157	14,638	14,959	14,856
All other	11,757	12,621	10,885	14,391
Total	1,576,023	1,874,309	1,156,975	988,178

[1] Census of Manufactures, 1914.

Jewelry—Imports by countries—Continued.

FISCAL YEARS—Continued.

Imported from—	1914	1915	1916	1917	1918
Austria-Hungary	$167,671	$110,929	$26,311	$15,066	.....
Belgium	2,723	194	7	.....	.....
France	334,405	148,200	177,754	184,356	$137,028
Germany	390,342	140,300	26,510	479	.....
Italy	19,322	16,516	18,609	6,110	3,710
Netherlands	1,860	5,629	11,626	605	18
Spain	5,798	4,991	10,525	8,368	4,956
Switzerland	34,640	8,912	13,219	4,983	6,882
United Kingdom	75,500	49,105	19,125	27,104	6,790
Canada	11,204	15,072	1,700	6,029	5,762
China	3,179	4,263	5,258	9,637	17,715
Hongkong	1,833	1,053	3,995	10,912	13,689
Japan	9,300	7,034	7,294	27,829	15,276
All other	9,373	8,406	7,885	4,358	4,832
Total	1,067,150	520,604	329,818	305,836	216,658

CALENDAR YEARS.

Imported from—	1918	1919	1920 [1]
Austria-Hungary	.....	$95,372	.....
Belgium	.....	1	.....
France	$149,403	536,911	.....
Germany	.....	13,548	.....
Italy	1,577	7,565	.....
Netherlands	1	1,584	.....
Spain	426	192	.....
Switzerland	6,834	8,085	.....
United Kingdom	3,939	19,090	.....
Canada	4,476	4,746	.....
China	4,484	10,705	.....
Hongkong	1,681	6,945	.....
Japan	9,413	16,986	.....
All other	3,705	4,844	.....
Total	185,939	726,574	$1,272,727

[1] 11 months.

Jewelry, commonly or commercially so known—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Ad valorem rate.
						Per cent.
1910	50 per cent [1]	.....	$2,657.00	$1,328.50	.....	50.00
1910	60 per cent	.....	724,235.90	434,541.56	.....	60.00
1910	Free [2]	.....	3,868.00	.....	.....	Free.
1910 [3]	75 per cent of 60 per cent. [4]	.....	44.00	19.80	.....	45.00
1910 [5]	Free [4]	.....	13.00	.....	.....	Free.
1910	60 per cent–20 per cent. [6]	.....	148.00	71.04	.....	48.00
1911	60 per cent	.....	692,069.61	415,241.75	.....	60.00
1911	Free [4]	.....	113.00	.....	.....	Free.
1911	60 per cent–20 per cent. [6]	.....	257.00	123.36	.....	48.00
1912	60 per cent	.....	418,311.23	250,986.74	.....	60.00
1912	Free [4]	.....	2.00	.....	.....	Free.
1912	60 per cent–20 per cent. [6]	.....	2.00	.96	.....	48.00
1913	60 per cent	.....	640,394.95	384,236.97	.....	60.00
1913	Free [2]	.....	50.00	.....	.....	Free.

[1] Coral, and manufactures of, act of 1897.
[2] Use of foreign ministers.
[3] July 1 to Aug. 5, 1909, under act of 1897.
[4] From Philippines.
[5] Aug. 6, 1909, to June 30, 1910, under act of 1909.
[6] Reciprocity with Cuba.

Jewelry, commonly or commercially so known—Imports for consumption—Revenue—Continued.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Ad valorem rate.
						Per cent.
1913	Free [4].		$35.00			Free.
1913	60 per cent–20 per cent.[6]		24.00	$11.52		48.00
1914 [7]	60 per cent		206,931.89	124,159.13		60.00
1914 [8]	....do		490,389.54	294,233.73		60.00
1914 [8]	60 per cent–20 per cent.[6].		19.00	9.12		48.00
1914	Free [2]		1,574.00			Free.
1914	Free [4]		638.00			Free.
1915	60 per cent		341,548.00	204,928.80		60.00
1915	60 per cent–20 per cent.[6]		14.00	6.72		48.00
1915	Free [2]		167.00			Free.
1915	Free [4]		10.00			Free.
1916	60 per cent		232,373.00	139,423.80		60.00
1916	60 per cent–20 per cent.[6]		49.00	23.52		48.00
1916	Free [4]		23.00			Free.
1917	60 per cent		215,300.00	129,180.00		60.00
1917	Free [4]		97.00			Free.
1918	60 per cent		176,529.00	105,917.40		60.00
1918	60 per cent–20 per cent.[6]		6.00	2.88		48.00
1918	Free [4]		10.00			Free.
1918 [9]	60 per cent		147,833.00	88,699.80		60.00
1918 [4 9]	Free		18.00			Free.
1919 [9]	60 per cent		543,814.00	326,288.40		60.00
1919 [4 9]	Free		184.00			Free.
1920 [9]	60 per cent		1,063,170.00	637,902.00		60.00
1921 [10]	....do		378,597.00	227,154.00		60.00

[2] Use of foreign ministers.
[4] From Philippines.
[6] Reciprocity with Cuba.
[7] July 1 to Oct. 4, 1913, under act of 1909.
[8] Oct. 4, 1913, to July 1, 1914, under act of 1913.
[9] Calendar years.
[10] Six months ended June 30, 1921.

Stampings, galleries, mesh, finished or not—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Ad valorem rate.
						Per cent.
1910	75 per cent		$14,004.07	$10,503.08		75.00
1911	....do		12,550.98	9,413.23		75.00
1912	....do		5,240.87	3,930.70		75.00
1913	....do		3,740.00	2,805.00		75.00
1914 [1]	....do		507.00	380.25		75.00
1914 [2]	50 per cent		40,124.00	20,062.00		50.00
1915	....do		19,567.00	9,783.50		50.00
1916	....do		8,901.00	4,450.50		50.00
1917	....do		10,391.00	5,195.50		50.00
1918	....do		4,151.00	2,075.50		50.00
1918 [3]	....do		4,716.00	2,358.00		50.00
1919 [3]	....do		18,160.00	9,080.00		50.00
1920 [3]	....do		14,873.00	7,436.50		50.00
1921 [4]	....do		12,292.00	6,146.00		50.00

[1] July 1 to Oct. 4, 1913, under act of 1909.
[2] Oct. 4, 1913, to July 1, 1914, under act of 1913.
[3] Calendar years.
[4] Six months ended June 30, 1921.

Cable, curb, rope and fancy chains valued at more than 30 cents per yard—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Ad valorem rate.
						Per cent.
1910	85 per cent		$137,788.36	$117,120.12		85.00
1911	do		111,128.77	94,459.46		85.00
1912	do		44,747.46	38,035.34		85.00
1913	do		12,662.00	10,762.70		85.00
1914 [1]	do		2,157.00	1,833.45		85.00
1914 [2]	60 per cent		7,375.00	4,425.00		60.00
1915	do		3,178.00	1,906.80		60.00
1916	do		1,360.00	816.00		60.00
1917	do		95.00	57.00		60.00
1918	do		5.00	3.00		60.00
1918 [3]	do					
1919 [3]	do		10.00	6.00		60.00
1920 [3]						
1921 [4]			50.00	3.00		60.00

[1] July 1 to Oct. 4, 1913, under act of 1909.
[2] Oct. 4, 1913, to July 1, 1914, under act of 1913.
[3] Calendar year.
[4] Six months ended June 30, 1921.

Mesh bags and purses—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Ad valorem rate.
						Per cent.
1910	85 per cent		$180,899.55	$153,764.61		85.00
1911	do		263,359.06	223,855.21		85.00
1911	85 per cent minus 20 per cent.[1]		30.00	20.40		68.00
1912	85 per cent		155,888.04	132,504.85		85.00
1913	do		38,522.54	32,744.17		85.00
1914 [2]	do		8,168.00	6,942.80		85.00
1914 [3]	60 per cent		43,021.75	25,813.05		60.00
1915	do		8,356.00	5,013.60		60.00
1916	do		3,314.00	1,988.40		60.00
1917	do		1,080.00	648.00		60.00
1918	do		422.00	253.20		60.00
1918 [4]	do		5,864.00	3,518.40		60.00
1919 [4]	do		288.00	172.80		60.00
1920 [3]	do		15,514.00	9,308.00		60.00
1921 [4]	do		10,091.00	6,054.60		60.00

[1] From Cuba.
[2] July 1 to Oct. 4, 1913, under act of 1909.
[3] Oct. 4, 1913, to July 1, 1914, under act of 1913.
[4] Calendar year.

Buckles, card cases, chains, cigar cases, millinery, military ornaments, etc.—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Ad valorem rate.
						Per cent.
910	85 per cent		$523,171.41	$444,695.69		85.00
910	85 per cent less 20 per cent.[1]		17.00	11.56		68.00
911	85 per cent		786,859.51	668,830.57		85.00
911	Free [2]		6.00			Free.
911	85 per cent less 20 per cent.[1]		1.00	.68		68.00
12	85 per cent		510,266.63	438,726.67		85.00
12	85 per cent less 20 per cent.[1]		3.00	2.04		68.00
13	85 per cent		288,465.27	245,195.55		85.00
14 [3]	do		71,716.37	60,958.92		85.00

Reciprocity with Cuba.
Philippines.
July 1 to Oct. 4, 1913, under act of 1909.

Buckles, cord cases, chains, cigar cases, millinery, military ornaments, etc.—Imports for consumption—Revenue—Continued.

Fiscal year	Rate of duty.	Quantity	Value.	Duty collected.	Value per unit of quantity.	Ad valorem rate.
						Per cent.
1914	60 per cent		$184,076 70	$110,807 22		60.00
1915	do		129,986 00	77,989 40		60.00
1915	45 per cent, less 30 per cent		15 00	7 20		46.00
1916	60 per cent		91,965 00	55,191 00		60.00
1917	do		51,093 00	30,655 60		60.00
1918	do		24,067 00	14,452 20		60.00
1919	do		26,715 00	16,031 40		60.00
1920	do		155,444 00	93,110 40		60.00
1921	45 per cent, less 20 per cent		5 00	2 40		46.00
1922	60 per cent		132,869 00	79,846 00		60.00
1923	do		48,936 00	29,974 00		60.00

Reciprocity with Cuba.
Calendar year.
Nine months ended June 30, 1921.

[illegible] Paris Exposition, 1900, etc.—Imports for consumption—Revenue—Continued.

Year	[illegible]	[illegible]	Value	Duty collected	Value per unit of quantity	Ad valorem rate.
					Dozens.	Per cent.
[illegible]	[illegible]	2	$16	$9 60	8 00	60.00
[illegible]	[illegible]	82	4 59	27 65	5 [illegible]	[illegible]
[illegible]	[illegible]	96	45	27 00	4 [illegible]	60.00
[illegible]	[illegible]	3	2	1 20	0 51	60.00
[illegible]	[illegible]	4	[illegible]	2 40	0 60	60.00
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] Reciprocity with Cuba. [illegible] Calendar year.

Gold, all other, manufactures of, or plated with—Imports for consumption—Revenue.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:						*Per cent.*
1910	45 per cent		$5,488.00	$2,469.60		45.00
1911	do		3,073.00	1,382.85		45.00
1912	do		10,486.50	4,718.93		45.00
1913	do		15,018.75	6,758.44		45.00
1914 [1]	do		1,626.00	731.70		45.00
1914 [2]	50 per cent		23,854.30	11,927.15		50.00
1914	Free [3]		10.00			Free.
1915	50 per cent		34,855.00	17,427.50		50.00
1916	do		29,972.00	14,986.00		50.00
1917	do		47,639.00	23,819.50		50.00
1918	do		56,185.00	28,092.50		50.00
Calendar year:						
1918	do		19,069.00	9,534.50		50.00
1919	do		30,849.00	15,424.50		50.00
1920	do		74,993.00	37,496.50		50.00
1921	do		23,610.00	11,805.00		50.00

[1] July 1, to Oct. 3,1 13, under act of 1909.
[2] Oct. 4, 1913, to July 1, 1914, under act of 1913.
[3] Duty remitted for For. Min.

Silver, all other, manufactured of, or plated with—Imports for consumption—Revenue.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:						*Per cent.*
1910	45 per cent		$202,869.49	$91,291.29		45.00
1910 [1]	75 per cent of 45 per cent [2]		7.00	2.37		33.75
1910 [3]	Free [4]		55.00			
1910	45 per cent less 20 per cent.[5]		10.00	3.60		36.00
1911	45 per cent		252,729.32	113,728.25		45.00
1911	Free [4]		3,538.00			Free.
1911	Free [3]		13.00			Free.
1911	45 per cent less 20 per cent.[5]		19.00	6.84		36.00
1912	45 per cent		330,995.14	148,948.02		45.00
1912	Free [3]		18.00			Free.
1912	45 per cent less 20 per cent.[5]		1.00	.36		36.00
1913	45 per cent		307,549.29	138,397.23		45.00
1913	Free [4]		4,077.00			Free.
1913	Free [3]		18.00			Free.
1913	45 per cent less 20 per cent.[5]		2.00	.72		36.00
1914 [6]	45 per cent		125,553.32	56,499.01		45.00
1914 [7]	50 per cent		377,717.66	188,858.84		50.00
1914	Free [4]		1,391.00			Free.
1914	Free [3]		83.00			Free.
1915	50 per cent		335,397.00	167,698.50		50.00
1915	50 per cent less 20 per cent.[5]		18.00	7.20		40.00
1915	Free [4]		386.00			Free.
1915	Free [3]		12.00			Free.
1916	50 per cent		242,916.00	121,458.00		50.00
1917	do		247,078.00	123,539.00		50.00
1917	50 per cent less 20 per cent.[5]		75.00	30.00		40.00
1917	Free [3]		48.00			Free.
1918	50 per cent		200,809.00	100,404.50		50.00
1918	Free [3]		108.00			Free.
1918	50 per cent less 20 per cent.[5]		88.00	35.20		40.00
Calendar year:						
1918	50 per cent		110,717.00	55,358.50		50.00
1918	50 per cent less 20 per cent.[5]		88.00	35.20		40.00
1919	50 per cent		222,319.00	111,159.50		50.00
1920	do		605,120.00	302,560.00		50.00
1921	do		215,125.00	107,562.00		50.00

[1] July 1 to Aug. 5, 1909, under act of 1897.
[2] Aug. 6, 1909, to June 30, 1910, under act of 1909.
[3] From Philippines.
[4] Duty remitted for use of foreign ministers or under Panama act.
[5] Reciprocity with Cuba.
[6] July 1 to Oct. 4, 1913, under act of 1909.
[7] Oct. 4, 1913, to July 1, 1914, under act 1913.

Jewelry—Domestic exports (fiscal years).

Exported to—	1911	1912	1913	1914
France	$[illegible]	$[illegible]	$[illegible]	$14,289
Germany	[illegible]	[illegible]	[illegible]	50,603
Italy	[illegible]	[illegible]	[illegible]	3,009
Sweden	[illegible]	[illegible]	[illegible]	773
United Kingdom	[illegible]	[illegible]	[illegible]	95,531
Cuba	[illegible]	[illegible]	[illegible]	16,370
Canada	[illegible]	[illegible]	1,497,943	733,332
Mexico	[illegible]	[illegible]	[illegible]	15,461
South America	[illegible]	[illegible]	[illegible]	55,930
Asia	[illegible]	[illegible]	[illegible]	4,987
Oceania	[illegible]	[illegible]	[illegible]	11,265
Africa	[illegible]	[illegible]	[illegible]	598
All other	[illegible]	[illegible]	[illegible]	30,537
Total	1,053,530	1,302,502	1,397,044	1,485,285

Exported to—	1915	1916	1917	1918	Calendar years.	
					1918	1919
Denmark	$2,572	$7,056	$3,518	.....	$1,546	$7,684
France	3,452	38,339	18,989	$3,704	2,204	90,947
Germany	1,300	.....	.....	.....	.....	4,767
Italy	650	1,583	3,959	1,416	993	240
Spain	1,440	24,387	94,421	115,294	34,597	108,197
United Kingdom	51,457	202,727	79,785	5,417	5,498	540,435
Canada	461,200	613,273	662,737	423,087	263,060	300,235
Panama	4,992	13,059	10,913	7,052	1,751	3,817
Mexico	5,281	3,664	16,967	46,398	10,233	25,415
Newfoundland	2,552	6,828	4,924	3,890	1,290	4,181
Cuba	15,409	19,268	42,997	52,323	33,942	31,716
South America	24,026	125,678	163,225	181,605	90,739	80,532
Asia	12,087	17,142	29,722	14,548	18,881	48,130
Oceania	13,457	28,755	40,196	21,476	56,569	9,457
Africa	574	4,655	15,451	14,719	3,490	19,010
All other	22,087	61,456	38,990	63,005	22,384	[1] 144,171
Total	634,287	1,168,172	1,226,826	953,934	547,377	1,428,803

[1] Belgium, $107,703.

Jewelry, articles exported with benefit of drawback (fiscal years).

	Value.	Paid. drawback.	Precious stones.[1]	Jewelry.
1910	.....	$12,403.11	.....	.....
1911	$614,157.50	60,801.59	$614,157.50	.....
1912	324,543.72	32,137.82	324,516.72	$27.00
1913	136,850.88	13,548.23	136,850.88	.....
1914	258,607.00	25,602.09	258,607.00	.....
1915	.....	.....	.....	.....
1916	54,913.00	7,421.73	54,913.00	.....
1917	106,340.00	20,727.83	106,340.00	.....
1918	38,685.00	7,417.18	38,685.00	.....
1918 [2]	21,866.00	4,087.02	21,866.00	.....
1919 [2]	5,528.00	1,094.54	5,528.00	.....

[1] Includes pearls.

[2] Calendar years.

Jewelry and related articles and parts thereof—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	459	Jewelry of all kinds	25 per cent ad valorem.
1890	452	Jewelry: All articles, not elsewhere specially provided for in this act, composed of precious metals or imitations thereof, whether set with coral, jet, or pearls, or with diamonds, rubies, cameos, or other precious stones, or imitations thereof, or otherwise, and which shall be known commercially as "jewelry," and cameos in frames.	50 per cent ad valorem.
1894	336	Jewelry: All articles, not specially provided for in this act, commercially known as "jewelry," and cameos in frames.	35 per cent ad valorem.
1897	434	Articles commonly known as jewelry, and parts thereof, finished or unfinished, not specially provided for in this act, including precious stones set, pearls set or strung, and cameos in frames.	60 per cent ad valorem.
1909	448	Chains, pins, collar, cuff, and dress buttons, charms, combs, millinery and military ornaments, together with all other articles of every description, finished or partly finished, if set with imitation precious stones composed of glass or paste (except imitation jet), or composed wholly or in chief value of silver, German silver, white metal, brass or gun metal, whether or not enameled, washed, covered, plated, or alloyed with gold, silver, or nickel, and designed to be worn on apparel or carried on or about or attached to the person, valued at 20 cents per dozen pieces, 1 cent each and in addition thereto three-fifths of 1 cent per dozen for each 1 cent the value exceeds 20 cents per dozen; all stampings and materials of metal (except iron or steel), or of metal set with glass or paste, finished or partly finished, suitable for use in the manufacture of any of the foregoing articles (except chain valued at less than 30 cents per yard other than nickel or nickel-plated chain), valued at 72 cents per gross, 3 cents per dozen pieces and in addition thereto one-half of 1 cent per gross for each 1 cent the value exceeds 72 cents per gross; rope, curb, cable, and other fancy patterns of chain, without bar, swivel, snap, or ring, composed of rolled gold plate or of silver, German silver, white metal, or brass, not exceeding one-half of one inch in diameter, breadth, or thickness, valued at 30 cents per yard, 6 cents per foot, and in addition thereto three-fifths of 1 cent per yard for each 1 cent the value exceeds 30 cents per yard; finished or unfinished bags, purses, and other articles, or parts thereof, made in chief value of metal mesh composed of silver, German silver, or white metal, valued at $2 per dozen pieces, 10 cents per piece and in addition thereto three-fifths of 1 cent per dozen pieces for each 1 cent the value exceeds $2 per dozen; all of the foregoing, whether known as jewelry or otherwise and whether or not denominatively or otherwise provided for in any other paragraph of this act, 25 per cent ad valorem in addition to the specific rate or rates of duty herein provided; all articles commonly or commercially known as jewelry, or parts thereof, finished or unfinished, including chain, mesh and mesh bags and purses composed of gold or platinum, whether set or not set with diamonds, pearls, cameos, coral, or other precious or semiprecious stones, or imitations thereof.	Do.
1913	356	Jewelry, commonly or commercially so known, valued above 20 cents per dozen pieces, 60 per cent ad valorem: rope, curb, cable, and fancy patterns of chain not exceeding one-half inch in diameter, width, or thickness, valued above 30 cents per yard; and articles valued above 20 cents per dozen pieces designed to be worn on apparel or carried on or about or attached to the person, such as and including buckles, cardcases, chains, cigar cases, cigar cutters, cigar holders, cigarette cases, cigarette holders, coin holders, collar, cuff, and dress buttons, combs, match boxes, mesh bags, and purses, millinery, military, and hair ornaments, pins, powder cases, stamp cases, vanity cases, and like articles; all the foregoing and parts thereof, finished or partly finished, composed of metal, whether or not enameled, washed, covered, or plated, including rolled gold plate, and whether or not set with precious or semiprecious stones, pearls, cameos, coral, or amber, or with imitation precious stones or imitation pearls.	Do.
		Stampings, galleries, mesh and other materials of metal, whether or not set with glass or paste, finished or partly finished, separate or in strips or sheets, suitable, for use in the manufacture of any of the foregoing articles in this paragraph.	50 per cent ad valorem.

COURT AND TREASURY DECISIONS.

What constitutes jewelry for tariff purposes has long been a troublesome question. The act of 1883 (par. 459) read "jewelry of all kinds." This was held to be governed by trade meaning. Proof of commercial designation was advantageous to the importer. In 1890 (par. 452) the provision read "all articles * * * which shall be known commercially as 'jewelry.'" The rate of duty was twice that of 1883, and it was to the advantage of importers to prove the articles were not commercially known as jewelry. In 1897 (par. 434) the word "commonly" was substituted for "commercially." Ordinary meaning was thus made the criterion, but commercial testimony was nevertheless still admitted and considered. In 1909 (par. 449) both terms "commonly" and "commercially" were used, with the disjunctive "or." Either trade or common meaning was accordingly sufficient for classification of articles as jewelry. "Commonly or commercially" was retained in 1913. Commercial usage is always a question of fact, to be established by evidence. Caprice of fashion or advantages of trade may vary it. (United States *v.* International Forwarding Co., 6 Ct. Cust. Appls., 25, of 1915; American Bead Co. *v.* United States, 7 Ct. Cust. Appls., 18, of 1916.) Common meaning, on the other hand, is matter of law within judicial knowledge. Testimony, however, as well as dictionaries and other authorities may aid the court. (American Bead Co. *v.* United States, 7 Ct. Cust. Appls., 18, of 1916.)

Without attempting a comprehensive definition, the Court of Customs Appeals has declared jewelry in common conception to be composed of precious metals or imitations thereof, or of precious or semiprecious stones, pearls or imitations thereof, or cameos, coral or amber, including artificial, synthetic or reconstructed pearls, rubies, or other precious stones strung or set. (American Bead Co. *v* United States, 7 Ct. Cust. Appls., 18, of 1916.) Jewelry may be useful as well as ornamental; all articles of personal adornment are not jewelry. (United States *v.* International Forwarding Co., 6 Ct. Cust. Appls., 25; United States *v.* American Express Co., 6 Ct. Cust. Appls., 97; United States *v.* Altman, 6 Ct. Cust. Appls., 131, of 1915; American Bead Co. *v.* United States, 7 Ct. Cust. Appls., 18, of 1916; Bloomingdale Bros. et al. *v.* United States, 8 Ct. Cust. Appls., 314, of 1918.)

Jude pendants suitable for necklaces, but completely finished, were held not dutiable as jewelry by reason of the fact that there was no metal work in their composition. (G. A. 8390. T. D. 38543 of 1920.)

Ivory, wood, and tortoise-shell bracelets were also held not to be dutiable as jewelry. (Abstract 44022 of 1920.)

"Designed" in "designed to be worn on apparel or carried on or about or attached to the person" refers to such articles as are specially fitted for being carried on or about the person and devoted to such use. (United States *v.* Faber, 7 Ct. Cust. Appls., 406, of 1917.) The controlling question, apart from value and material, is whether the articles are designed to be so worn, carried, or attached in the same manner as the enumerated articles and like articles when in their customary use. (Gallagher *v.* United States, 6 Ct. Cust. Appls., 105 of 1915.) Congress did not intend to include in the jewelry provision any such articles not composed of metal unless commonly or commercially known as jewelry. (American Bead Co. *v.* United

States, 7 Ct. Cust. Appls., 18, of 1916.) Bone watch charms were held to be manufactures of bone and not jewelry, articles of bone not being jewelry. (U. S. *v.* Mandel, 10 Ct. Cust. Appls., —, T. D. 38294.) Bone brooches (Abstract 43785) and pendants of bone (Abstract 43974 of 1920, holding also that pendants of ivory are dutiable as manufactures of ivory) were likewise classified. Articles of jet have likewise been held not to be jewelry. (U. S. *v.* Beierle, 1 Ct. Cust. Appls., 457; U. S. *v.* Sheldon & Co., 2 Ct. Cust. Appls., 283; American Bead Co. *v.* United States, 7 Ct. Cust. Appls., 18, T. D. 36259; Wolff & Co. *v.* United States, 7 Ct. Cust. Appls., 156; Abstracts 43804, 43806, and 43905 of 1920.) The words "like articles" following articles enumerated after the words just quoted must be ejusdem generis with the articles named. (Gallagher *v.* United States, 6 Ct. Cust. Appls., 105, of 1915.) Rosaries of silver-plated metal and colored glass, metal chief value, were held dutiable under paragraph 167. (United States *v.* American Bead Co., 7 Ct. Cust. Appls., 132, of 1916.) But silver-plated metal rosaries were classified under paragraph 356 at 60 per cent ad valorem. (Abstract 43785, of 1920.) Whether they are "designed to be worn on apparel or carried on or about or attached to the person" is a matter of evidence. (United States *v.* Malhami & Co., 7 Ct. Cust. Appls., 175, of 1916.)

Cigar lighters designed to be carried on the person being within paragraph 356 and also paragraph 381 as smokers' articles, was held by virtue of paragraph 386, dutiable under paragraph 356 of the act of 1913. (Bischoff & Co. *v.* United States, 7 Ct. Cust. Appls., 138. of 1916.)

Compasses of metal and glass were held to come within paragraph 356. (Abstract 43805, of 1920.)

The words "parts thereof" and "composed of metal" do not refer to jewelry. (Mamluck & Co. et al. *v.* United States, 6 Ct. Cust. Appls., 556, of 1916; American Bead Co. *v.* United States, 7 Ct. Cust. Appls., 18, of 1916.) An article not an actual constituent of a manufacture can not be considered as a part thereof unless it has been advanced to a point which definitely commits it to that specific class and kind of manufacture. (United States *v.* American Bead Co., 9 Ct. Cust. Appls., 27, of 1919.) Articles composed in chief value of metal with a substantial minor value of other material, the metal value distinctly preponderating, are within the phrase. (Hensel *v.* United States, 6 Ct. Cust. Appls., 162, of 1915.)

Hatpins with large paste heads of a pearly luster and metal gold-plated shafts, paste chief value, were held dutiable under paragraph 95 of the act of 1913 as manufactures of paste rather than under paragraph 167 as gold-plated articles or under paragraph 356 as jewelry. Paragraph 167 was restricted to articles or wares wholly or in chief value of metal. Every importation regardless of size, use, or shape, which remotely resembles a pearl in color can not be regarded as an imitation pearl and classified as jewelry. (Veith *v.* United States, 10 Ct. Cust. Appls., —; T. D. 38554.)

The words "separate or in strips or sheets" following "stampings, galleries, mesh and other materials of metal," are not words of limitation inserted to narrow the scope of the sentence, but words of amplification to make certain that whether imported in the form of strips or sheets or as separate entireties cut therefrom, stampings, galleries,

mesh and other materials of metal, capable of such forms should not escape the duty prescribed by the provision. (French Import Co. *v.* United States, 7 Ct. Cust. Appls., 460, of 1917.) "Suitable for use" does not imply or require chief use, but susceptibility for the use expressed. (United States *v.* Lorsch & Co., 8 Ct. Cust. Appls., 109, of 1917.)

Metal vanity cases are dutiable at 60 per cent under this paragraph but leather vanity cases, even though the contents be of metal and metal chief value of the entirety, are dutiable at 35 per cent under paragraph 360. Some parts of vanity cases are dutiable under paragraph 356 of the act of 1913 at 60 per cent, but small mirrors suitable for use in fitting out vanity cases are dutiable at 30 per cent under paragraph 95.

Necklaces, as a rule, are jewelry and dutiable at 60 per cent under paragraph 356, but necklaces of various materials, such as imitation jet, are not so classified. (United States *v.* Beierle, 1 Ct. Cust. Appls., 457, of 1911; American Bead Co. *v.* United States, 7 Ct. Cust. Appls., 18; Wolff & Co. *v.* United States, 7 Ct. Cust. Appls., 156; American Bead Co. *v.* United States, 7 Ct. Cust. Appls., 161, of 1916.)

But necklaces made of wax-filled glass imitation pearl beads, permanently strung and fitted with metal clasps and imitation pearl pendants were classified as jewelry under paragraph 356 of the act of 1913, and not under paragraph, 333 as articles of beads. The provision in paragraph 356 for such jewelry as is valued above 20 cents per dozen pieces was declared to indicate that in the congressional view there is cheaper jewelry and serves to show that whether or not merchandise is to be classified as jewelry is not to be determined by its value. (United States *v.* Woolworth Co., 10 Ct. Cust. Appls., —; T. D. 38552.)

See survey on precious, semiprecious, and imitation precious stones and upon beads.

PRECIOUS STONES AND PEARLS, NOT ADVANCED IN VALUE FROM THE ORIGINAL STATE.[1]

SUMMARY.

Precious stones are crystals of various rare minerals. They are cut to enhance their beauty and then set in jewelry. The diamond, a crystalline form of carbon, is the most important stone, the production surpassing in value that of all other gems combined. Some precious stones, notably the diamond, are used in the trades for cutting glass, engraving on copper, as dies for wire drawing, as an abrasive for truing emery wheels, and for bearings in delicate machinery. The United States possesses no large developed economic deposits of precious stones. The domestic production varies widely from year to year but seldom amounts to over $300,000.[2] This figure is almost insignificant in comparison with the imports.

Pearls are of organic origin, and occur as secretions in several species of shellfish. Most of the world's production of pearls are

[1] See also surveys on cut gems, and imitation pearls and precious stones.
[2] Domestic production is gems other than diamonds, and in this branch of the industry domestic production plays an important part.

found in the sea oysters native to the South Pacific Ocean, but the production from the fresh-water clams of the Mississippi River and its tributaries amounts to about $300,000 annually.

Imports of pearls and precious stones fluctuate with general industrial conditions. Large increases are noted during prosperous years, the importations decreasing materially during periods of financial unrest. During the period 1910 to 1919, inclusive, the maximum imports of precious stones and pearls was in 1919, when about $51,000,000 worth were entered. The minimum imports were about $14,000,000 in 1915.

Most of the precious stones imported have been cut abroad and are imported as finished gems, but of late years the domestic gem-cutting industry has expanded materially, and during 1918 importations of rough stones amounted to almost 47 per cent of the total importations.

TARIFF CONSIDERATIONS.

Precious stones suitable for use as gems are used for no other purpose. The stones used for industrial purposes are those unsuitable for gems because of defects. Bort is the general term used to denote diamonds and parts of diamonds which are unsuitable for gem use. Miners', glaziers', and engravers' diamonds are subdivisions of this class of material. At present miners', glaziers', and engravers' diamonds are admitted free, and unclassified material is dutiable at 10 per cent.

Gems are so easily concealed about the person that any increase of duty above a nominal percentage results in extensive smuggling operations. It is difficult to smuggle unset stones because, aside from the fact that the values per unit of weight is much less than that of cut stones, the cutting industry is concentrated in and around New York City, and all sales of stones are easily traced. Cut stones, on the other hand, may be disposed of to retail jewelers throughout the country.

Uncut gems—Summary table.

Year.	Domestic production.[1]	Ratio of imports to production.	Value (imports for consumption).	Amount of duty.	Actual or equivalent ad valorem rate.
		Per cent.			*Per cent.*
1910			$10,050,450.00	[2]	
1911	$343,692.00	2691.00	9,251,101.00	[2]	
1912	319,722.00	3001.00	9,597,657.00	[2]	
1913	319,454.00	3771.00	12,049,378.00	[2]	
1914	124,651.00	3440.00	4,289,195.00	[2]	
1914			3,167,136.15	$316,711.12	10.00
1915	170,431.00	1911.00	3,258,347.00	325,834.70	10.00
1916	217,793.00	5339.00	11,628,806.00	1,162,880.60	10.00
1917	131,012.00	9150.00	11,994,710.00	1,199,471.00	10.00
1918	106,523.00	12280.00	13,090,383.00	1,308,833.80	10.00
1918[3]			12,776,308.00	1,277,416.30	10.00
1919[3]			20,526,284.00	2,052,628.40	10.00

[1] Diamond values less than $5,000 per annum.
[2] Admitted free under act of 1909.
[3] Calendar year.

Industrial precious stones and bort—Summary table.

Year.	Value (imports for consumption).	Amount of duty.	Actual or ad valorem rate.[3]
			Per cent.
1910	$507,350.00		
1911	304,114.00		
1912	456,595.00		
1913	462,284.00		
1914	[1] 780,246.00	$6,362.70	10.00
1915	[1] 329,820.00	7,151.80	10.00
1916	[1] 793,059.00	5,497.40	10.00
1917	[1] 1,105,575.00	15,698.30	10.00
1918	[1] 1,317,914.00	29,793.90	10.00
1918[2]	[1] 1,178,634.00	46,023.70	10.00
1919[2]	[1] 2,351,469.00	136,708.80	10.00

[1] Values include classified industrial diamonds admitted free.
[2] Calendar year.
[3] The rate shown is the actual rate on bort only.

Pearls, natural, split, or drilled but not strung—Summary table.

Year.	Domestic production.[1]	Value (imports for consumption).[2]	Amount of duty.	Actual or ad valorem rate.
				Per cent.
1910	$300,000.00	$1,819,242.00	$181,909.25	410.00
1911	300,000.00	1,130,455.00	113,045.35	10.00
1912	300,000.00	2,083,288.00	208,263.70	10.00
1913	300,000.00	5,800,790.00	580,046.50	10.00
1914	300,000.00	[3] 2,673,548.00	[3] 267,354.80	[3] 10.00
1914		[4] 1,591,907.00	[4] 318,381.40	[4] 20.00
1915	300,000.00	1,551,597.00	310,319.40	20.00
1916	300,000.00	9,932,109.00	1,982,372.80	20.00
1917	300,000.00	9,065,234.00	1,802,467.60	20.00
1918	300,000.00	1,668,433.00	320,514.00	20.00
1918[5]		765,929.00	133,598.00	20.00
1919[5]		11,008,973.00	2,186,702.00	20.00

[1] Bureau of Fisheries estimate of price paid the fisherman, calendar years.
[2] Includes small amonnts, fees, from the Philippines.
[3] Under act of 1909.
[4] Under act of 1913.
[5] Calendar year.

Precious stones—Distribution of precious stone imports (fiscal years).

	1910	1911	1912	1913	1914
Diamonds, uncut	$9,767,640	$9,071,089	$9,484,049	$11,973,764	$7,416,716
Diamonds, cut	29,466,595	24,390,076	24,511,823	27,170,996	17,737,278
Industrial diamonds	468,148	211,851	349,464	368,241	689,734
Unclassified bort	39,202	92,263	107,131	94,043	90,512
Total diamonds	39,741,585	33,765,279	34,452,467	39,607,044	25,934,240
Other precious stones uncut	282,810	180,012	112,957	75,614	39,605
Other precious stones cut	4,419,936	4,058,696	3,463,664	2,774,220	2,528,056
Total uncut stones	10,050,450	9,251,101	9,597,006	12,049,378	7,456,321
Total cut stones	33,886,531	28,448,772	27,975,487	29,945,216	20,265,334
Percentage uncut	22.8	24.5	25.5	28.7	26.9
Pearls	1,819,242	1,130,455	2,083,288	5,800,790	4,265,455
Total real gems	45,756,225	38,830,328	39,655,781	47,795,384	31,987,110
Imitation gems	1,469,760	1,545,044	1,184,519	1,313,341	1,187,442
Grand total	47,225,985	40,375,372	40,840,300	49,108,725	33,174,552
Total duties[1]	3,570,562	2,957,922	3,005,812	3,574,568	4,039,952

[1] Duties for precious stones only.

Precious stones—Distribution of precious stone imports (fiscal years)—Continued.

	1915	1916	1917	1918	1919	1920
Diamonds, uncut	$3,204,206	$11,461,475	$11,864,421	$12,975,502	$12,636,024	$20,306,758
Diamonds, cut	8,437,782	20,605,064	21,873,947	13,868,995	7,734,150	64,085,610
Industrial diamonds	258,272	738,085	948,592	1,049,975	718,397	984,381
Unclassified bort	71,548	54,974	156,983	297,939	460,237	1,367,088
Total diamonds	11,971,808	32,859,598	34,843,943	28,192,411	21,548,808	86,743,837
Other precious stones, uncut	54,141	167,331	130,289	114,881	140,284	219,526
Other precious stones, cut	762,304	1,504,977	2,341,182	1,158,479	956,939	4,935,287
Total uncut stones	3,258,347	11,628,806	11,994,710	13,090,333	12,776,308	20,526,284
Total cut stones	9,200,086	22,110,041	24,215,129	15,027,474	8,691,089	69,020,897
Percentage uncut	26.1	34.5	33.1	46.6	58.8	22.9
Pearls	1,551,597	9,932,109	9,065,234	1,668,433	765,929	11,008,973
Total real gems	14,010,030	43,670,956	45,275,073	29,786,290	22,233,326	100,556,154
Imitation gems	853,773	817,642	1,129,988	855,258	889,086	1,590,182
Grand total	14,863,803	44,488,598	46,405,061	30,641,548	23,122,412	102,146,336
Total duties	2,483,326	7,571,539	7,860,476	4,664,636	3,373,073	18,498,228.60

General Information.

PAR. 357, TARIFF ACT OF 1913.

Diamonds and other precious stones, rough or uncut, and not advanced in condition or value from their natural state by cleaving, splitting, cutting, or other process, whether in their natural state or broken, and bort; any of the foregoing not set, * * * , 10 per cent ad valorem; pearls, and parts thereof, drilled or undrilled but not set or strung, * * *, 20 per cent ad valorem.

PAR. 474. Glaziers' and engravers' diamonds, unset, miners' diamonds. Free.

PAR. 520. Jet, unmanufactured. Free.

PAR. 463. Coral, marine, uncut, and unmanufactured. Free.

PAR. 390. Agates, unmanufactured. Free.

DESCRIPTION AND USES.

Precious stones are crystals of various rare minerals which are used in jewelry, after cutting and polishing to develop the color and refraction. Precious stones are sold by weight. The unit, called a "carat" (caret), is equal to 205 milligrams or $\frac{1}{151}$ part of an ounce troy.

The diamond, a crystalline form of carbon, is the most important gem stone. It is usually transparent, is the hardest known substance, and possesses a very high index of refraction so that when cut it sparkles under the light. Diamonds are either colorless, yellow, bluish, pink, or black. The bluish white stones are most prized, and are worth more per carat than the pink, yellow, or black crystals. The diamond has always been a fashionable stone and for this reason the price has increased in the face of greatly increased production. Recently, very small artificial diamonds have been produced, but so far all attempts to produce stones suitable for gems have resulted in failure. The value of the world's diamond production is greater than that of all other precious stones combined.

Bort is diamond material not suitable for use as gems.

Emerald is a deep green variety of beryl, and *ruby* is a deep red variety of corundum (aluminum oxide). Both stones are produced in very limited quantities from scattered deposits, and fine specimens command higher prices than diamonds of the same size.

Sapphire is a white, yellow, or blue variety of corundum. The blue stones are the most valuable, but the yellow and white stones are used extensively as cheap gems.

Tourmalines are anhydrous aluminum-boron silicates. The crystals are red, pink, green, or black. The value depends on the color and the freedom from flaws.

Garnets are iron-aluminum or magnesium-aluminum silicates. The crystals are deep red in color. The stone is rather common and the value is small.

Turquoise is a blue opaque mineral composed of phosphate of alumina, colored with a little iron and copper.

Beryl is a beryllium-aluminum silicate. The color may be white, yellow, pink, blue, or green. The deep green phase is the emerald, the blue is called aquamarine, and the yellow, golden beryl.

Silica, the oxide of silicon, is a gem mineral of great importance. The milky white transluscent form is the opal. Chalcedony, agates, and petrified wood are dense noncrystalline forms of the same mineral. The crystallized forms are known as rock crystal, amethyst, and other names depending on the color.

Pearls are of animal origin. They are formed by several species of shellfish—notably the oyster, salt-water mussel, and fresh-water clam—as a secretion about any grit that finds its way between the shells and can not be expelled. They possess a high polish when found and do not require further treatment to fit them for use as gems. They are, therefore, in the same class as cut diamonds, although no additional work has been performed upon them.

Coral is the shell of certain marine crustacea.

Jet is a hard pitch-black coal, capable of taking a high polish.

Agate is a variety of quartz which is peculiar in consisting of bands or layers of blended colors. Certain varieties are distinguished, as ribbon agate, fortification agate, moss agate, star agate, zone agate, clouded agate, etc. Most commercial agate is artificially stained, so that stones naturally unattractive come to be valuable for ornamental purposes.

Many other stones are used as gems, but to a limited extent only. A complete list of gem minerals—numbering many hundreds—is to be found in Mineral Resources of the United States, 1917, Part II.

USES.

Precious stones are used as gems, and some, notably the diamond, have been turned to limited commercial use.

The black form of diamond is widely used as the cutting agent in the diamond rock drill, and chips from the gem diamond are used for cutting glass and engraving on copper and steel. Diamond dust is used as an abrasive for cutting and polishing diamonds and other gems. Inferior diamonds are used for truing abrasive wheels. The automobile industry is a large consumer. Drilled gem diamonds are used as dies for drawing very fine wires.

Small rubies, sapphires, and other precious stones are used as bearings in watches and other delicate mechanisms.

Agates are used in rings, cups, beads, handles of small utensils, burnishers, pestles, mortars, and trivial ornaments, and in delicate mechanisms, such as bearing-surface pivots and knife edges of weighing apparatus.

SUBSTITUTES.

In general, it may be said that semiprecious stones are used as imitations of precious stones. Cheap imitations of every known precious stone are made of glass. The ruby and sapphire are the only stones that have been produced artificially of a size suitable for gems. Artificial rubies and sapphires of large size and fine color have been produced, which can be distinguished from natural stones only with extreme difficulty. Mined rubies of good color are worth up to $1,000 per caret but synthetic stones may be bought for $10 to $20 per carat.

DOMESTIC PRODUCTION.

Precious stones are widely distributed over the earth but no extensive deposits of any of the major precious stones have been developed in the United States. The only precious stones that have been produced commercially in this country are the sapphire, turquoise, tourmaline, garnet, topaz, beryl, and several varieties of quartz. Domestic production of several of these varieties is often sufficient to supply the domestic demand.

Diamond.—Occasional diamonds have been found in the glacial drift in Michigan, Wisconsin, and Illinois, and in placer deposits in North Carolina, but all attempts to discover the source of the supply have failed. A rock formation in Arkansas, similar to the "pipes" of so-called "blue ground" from which the bulk of the South African production is produced, is now being developed. More than a thousand diamonds, some of considerable value, were found during previous development work at this deposit and it is possible that deposits of large extent and great value will be discovered as the present development proceeds.

Sapphires are found in considerable quantities in several localities in Montana, but in general the deposits are scattered and do not justify commercial development. One dike deposit containing sapphires is known and has been worked to some extent. The rough stones are exported and are cut abroad.

Turquoise.—A large quantity of turquoise and turquoise matrix material is produced from widely scattered veins in Arizona and New Mezico, and southern California.

Garnets are produced in North Carolina, but only in small quantities. Imperfect crystals suitable for abrasive purposes are abundant and are mined extensively.

Topaz has been found in the Thomas Mountains, Utah, and in San Diego County, Calif.

Beryl.—Pink and blue-green beryl or aquamarine have been found in California.

Tourmalines are found in granitic dikes in Maine, California, and Connecticut. The gems occur in pockets and are recovered as a by-product of the quarrying operation.

Quartz is one of the most widely distributed rock minerals, but large crystals of colors suitable for gems are rather rare. The blue variety known as amethyst, the colorless form known as rock crystal,

and the dense noncrystalline variety known as chalcedony, agate, or petrified wood have been found here in some quantity.

Numerous localities yield agates. They are abundant in trap rocks of the Lake Superior region. Wood agate, or agatized wood, is found in Colorado, California, and elsewhere in the West, the famous "silicified forest" known as Chalcedony Park, in Arizona, being most noted. Foreign agates are found mainly in Uruguay and Brazil; these were formerly sent to Germany where their polishing was an important industry.

Pearls are produced in the United States in some quantity. The river clams, caught in the Mississippi River for their shells, are an important source of supply. Occasional gems are found in the thin-shelled mussels, native to the ponds and streams of eastern United States, and in the common edible oyster.

Organization.—Most, if not all, of the precious-stone production of the United States, with the exception of the production of a few small turquoise mines in the Southwest, are from small pockets. Little capital is employed in the mining industry.

Domestic consumption.—The United States is the largest consumer of precious stones in the world. The imports of diamonds alone amount to between 30 and 35 million dollars yearly, and compared to this figure the domestic production is insignificant.

Domestic exports.—Nil.

FOREIGN PRODUCTION.

The commercial deposits of precious stones are widely scattered; emeralds are mined extensively in Colombia, South America; sapphires and several related minerals, in Siam and Ceylon; garnets, in Bohemia; topaz, in the Ural Mountains of Russia and in Brazil; turquoise, in Persia; beryl, in Madagascar; and opals, in New South Wales, Hungary, and Mexico. A large part of the gem pearl supply is found in an oyster native to the islands of Oceania. Coral is imported from Italy.

Diamonds were formerly obtained from the alluvial deposits of India, and later from extensive deposits in Brazil. The chief supply of black diamonds for use in diamond drills comes from the latter locality.

In recent years the Kimberly mines of South Africa have supplied over 95 per cent of the total diamond output of the world. In South Africa diamonds occur in a peculiar serpentine breccia known as "blue ground." This material fills what appears to be the necks of extinct volcanoes. After weathering on the surface for some time, the diamond-bearing material is broken up and the diamonds recovered by passing the gravel over greased shaking tables. The diamonds stick to the greased surface and are recovered.

The entire South African diamond supply, except for that from a few minor placer producers, is controlled by one large syndicate that regulates the sale and distribution of the product. In this way the production is controlled, the market is stabilized, and violent fluctuations of price are prevented. The entire production was shipped to England before the war and then distributed to the various cutting centers, such as Amsterdam, Brussels, Antwerp, and Paris. New York City has become an important cutting center in recent years. During the war considerable quantities of placer stones were shipped direct to New York from South Africa.

IMPORTS.

Imports of precious stones vary directly with the prosperity of the country. In unsettled periods as during the fiscal year 1915, the imports are comparatively small while in prosperous periods, when the general buying power is increased, the imports of gems are greatly stimulated. During the 10-year period, 1910 to 1919, inclusive, the value of imports of diamonds and other precious stones, including pearls, fluctuated from $14,555,224 in 1915 to $48,210,381 in 1913.

In 1910 only 22 per cent of the total value of precious stones (chiefly diamonds) imported were rough or uncut but the percentage of uncut stones has increased steadily and in 1918 amounted to 48 per cent of the total imports.

TARIFF HISTORY.

Pearls were dutiable at 10 per cent ad valorem in every tariff act from 1883 to 1909, inclusive. In 1913 the duty was increased to 20 per cent ad valorem.

In the act of 1883, diamonds, rough or uncut, were admitted free, but other precious stones either rough or cut, were dutiable at 10 per cent ad valorem. All precious stones, uncut, were admitted free under the tariff of 1890, but a 10 per cent duty was imposed in the act of 1894. All uncut precious stones were admitted free under the tariff acts of 1897 and 1909. In 1913, uncut precious stones of all kinds were made dutiable at 10 per cent ad valorem.

Diamonds destined for commercial use in the industries, including glaziers', engravers', and miners' diamonds, and diamond fragments not suitable for gems (bort), were on the free list in the tariff acts of 1883, 1890, 1894, 1897, and 1909. In the tariff act of 1913, bort, n. s. p. f., was made dutiable at 10 per cent ad valorem, but miners', glaziers', and engravers' diamonds remained on the free list.

COMPETITIVE CONDITIONS.

As there is no stable precious stone producing industry in the United States, the prices charged for diamonds in the United States are based on the syndicate price, the price charged by the De Beers (English) producers, plus duty. The value of uncut stones is something of a gamble; the syndicate compels the buyer to accept the seller's assortment, and, furthermore, small flaws and variations of color can not be seen in the rough stone. There are two factors which tend to increase the cost of a cut stone above the theoretical cost obtained by adding the cost of cutting to the price of the rough stone. In the first place it is necessary to cut away a large and variable part of the original stone in cutting, and finally a charge must be made for the stones which on cutting prove to be of poor grade, and for those which are broken in the process.

TARIFF CONSIDERATIONS.

Precious stones, suitable for use as gems, are used for no other purpose. They are therefore luxuries. The rate of duty has very little effect on the amount of stones imported, but high duties always place a premium on smuggling, and as diamonds, especially, represent a large amount of money in small space, a fortune in the stones can be hidden about the person.

The smuggler buys his stones in the European market and as he pays no duty he has a 20 per cent advantage in the United States market in competition with honest imports and 10 per cent advantage in competion with domestic cutters who were obliged to pay 10 per cent duty on their raw material. A decreased duty on uncut stones decreases the smugglers' advantage over the domestic cutter but does not alter his advantage over the importer of cut stones.

A large supply of smuggled cut stones demoralizes the domestic cutting industry as well as the legitimate importing of cut stones, especially when, as at present, the rough material is dutiable. The American Jewelers' Protective Association assert that a large amount of semiprecious stones was formerly imported rough on approval. The duty on uncut stones makes this procedure difficult of operation and handicaps the domestic cutter in purchasing his raw material. They estimate that doubling the duty causes four times as much smuggling, and the result may easily be a reduction in the revenues, not to mention the damage done the domestic cutters and honest importers due to the large quantities of smuggled stones entering the market in competition with the legitimate importations.

Bort is the name given to a large class of diamonds which are not suitable for use as gems. It includes the black diamonds, or carbonado, used in diamond drills (miners' diamonds), diamonds showing irregular crystal structure which will not polish, irregular fragments of gem diamonds obtained in the cutting process and used in glass cutting and engravers' tools (glaziers' and engravers' diamonds), diamonds which have been drilled for use as dies in wire drawing machines, diamonds suitable for use in dressing abrasive wheels, and other diamond fragments of no particular industrial use. Under the present classification, fragments which are suitable for use in miners' drills and glaziers'and engravers' tools are admitted free (par. 474), although the unmanufactured fragments are dutiable. (Par. 357.)

There is little temptation to smuggle uncut stones because they must be marketed through a diamond-cutting establishment. As the industry is concentrated around New York, all sales are easily traced. Cut stones, on the other hand, may be sold to any one of the thousands of retail jewelers throughout the United States without exciting suspicion.

Under the present classification matched pearls, which, when strung, form a necklace, are admitted at 20 per cent if imported unstrung. Matched and graded pearls are worth more than individual pearls of the same size and the value is the same either strung or loose.[1] The duty on a strung necklace, however, is 60 per cent, since it is an article commonly known as jewelry.

Value per unit of weight regardless of the mineral composition appears to be the only effective basis of distinction between precious and semiprecious stones. Rarity, color, and size are factors in determining the value of gem minerals, and fashion may raise a comparatively common stone to the rank of precious gem. Sapphires are found in several colors—from white through yellow and blue to red—and the value may vary from a few dollars to a thousand

[1] There was testimony in case U. S. r. Citroen that pearls graded for a necklace are less valuable than the aggregate values of the individual pearls, but the evidence was contradictory, other witnesses testifying that pearls were worth more as a necklace. It is probable that the auction value of the necklace is less than that of individual pearls, but when the pearls have been accumulated on order from a prospective buyer conditions are reversed.

dollars a carat. The value of diamonds depends largely on color; brown stones are comparatively inexpensive, while blue-white and the fancy-colored gems are probably the most valuable known. The value of Chinese jade while usually much less than that of diamonds varies between wide limits, the value being based upon color and to a certain extent upon age. Amethyst and aquamarines are popular at present and the value in consequence is considerably higher than it had been for some years. Other stones formerly ranking with the more valuable gems have lost caste because of changed preference or increased production.

Value of precious stones produced in the United States in 1918, by States.

Montana	$47,753	Colorado	$3,430
Nevada	21,674	Arkansas and New Mexico	3,089
California	9,572	Other States [1]	4,667
Arizona	9,206		
Maine	7,132	Total	106,523

Production of precious stone material in the United States.[1]*—Value of the rough stones.*

Stone.	1911	1912	1913	1914	1915	1916	1917	1918
Agates, chalcedony, etc.	$8,128	$9,978	$8,895	$8,312	$23,262	(2)	(2)	(2)
Amethyst	725	363	389	255	122	(2)	(2)	(2)
Benitoite		150						
Beryl, except emerald	2,505	1,765	1,615	2,395	1,675	$2,031	$2,178	$1,906
Californite	150	275	152	1,425	[3] 1,535	(4)	2,765	320
Chiastolite	25						(4)	(4)
Chlorastrolite	1,992	350				(4)	(4)	(4)
Chrysoprase	13,550	220		75	1,050			
Copper ore gems	800	1,085	2,350	1,280	1,120	1,713	2,857	2,299
Cyanite		10			(4)			
Diamond	2,750	1,475	6,315	765	608	2,680	4,175	1,910
Emerald	9,500	2,375				(5)	(5)	(5)
Epidote		10				(4)	(4)	(4)
Spark of feldspar, sunstone, etc.	175	1,310	1,285	449	368	305	(4)	(4)
Garnet	2,065	860	4,285	1,760	4,523	1,542	624	1,277
Gold quartz	1,700	1,900	300	1,050	(6)	(2)	(2)	(2)
Hematite					126	(4)	(4)	138
Jade				300				
Jasper, pet. wood, etc.	2,240	6,005	5,275	4,700	8,503	(2)	(2)	(2)
Opal	1,875	10,925	15,130	1,114	[7] 1,850	1,838	805	6,304
Phenacite					(4)		(4)	(4)
Peridote	360	8,100	375	100	(4)	455	(4)	1,018
Prase			25			(2)	(2)	(2)
Pyrite		265	50		1,042	2,075	(4)	(4)
Quartz, rock, crystal, etc.	2,400	2,448	1,640	4,046	[8] 2,437	25,707	28,273	15,211
Rhodenite	1,300	550	165	1,050	85	(4)	(4)	515
Rose quartz	1,744	865	337	400	350	(2)	(2)	(2)
Ruby	210	2,260	200	100		(9)	(9)	(9)
Rutile					(4)	(4)	(4)	
Sapphire	215,313	195,505	238,638	60,932	88,214	99,180	54,204	42,414
Smithsonite	25	650	50	50	(4)		(4)	
Spodumine, kunzite, hiddenite	75	18,000	6,520	4,000	(4)	(4)	(4)	281
Thomsonite	1,500	450		21	(4)	47	(4)	(4)
Topaz	2,675	375	736	1,380	862	1,005	230	907
Tourmaline	16,645	28,200	7,630	7,980	10,969	50,807	12,452	6,206
Turquoise and matrix	44,751	10,140	8,075	13,370	11,691	21,811	14,171	20,667
Variscite, amatrice, chlorutahlite	5,750	8,450	6,105	5,055	3,867	3,140	2,350	753
Miscellaneous	3,224	4,408	2,920	2,287	6,172	3,457	5,928	4,397
Total	343,692	319,722	319,454	124,651	170,431	217,793	131,012	106,523

[1] Mineral resources, U. S. Geological Survey.
[2] Included under quartz.
[3] Includes $10 vesuvianite not Californite.
[4] Small production included under miscellaneous gems.
[5] Included under Beryl.
[6] Small production of gold quartz included under quartz.
[7] Including $225 wood opal.
[8] Including gold quartz.
[9] Included in corundum.

[1] Other States include Florida, Hawaii, Idaho, Michigan, Minnesota, Nebraska, New Hampshire, New Jersey, New York, North Carolina, North Dakota, Oregon, Pennsylvania, South Dakota, Texas, Utah, Virginia, Washington, and Wyoming. Production in each State less than $1,000.

Diamonds and other precious stones—Production in foreign countries.

DIAMOND STATISTICS.

DIAMOND OUTPUT OF THE BELGIAN CONGO.

Year	Weight in carats	Year.	Weight in carats.
1915	46 833	1927	100,000
1916	53 144	1928	164,420

Mineral Industry 1928.

DIAMOND OUTPUT OF RHODESIA.

Year.	Weight in carats.	Value.	Value per carat.
[illegible]	[illegible]	[illegible]	$25.13
[illegible]	[illegible]	[illegible]	19.31
[illegible]	[illegible]	[illegible]	18.19
[illegible]	[illegible]	[illegible]	25.41
[illegible]	[illegible]	[illegible]	23.51

DIAMOND OUTPUT OF SOUTHWEST AFRICA (GERMAN).

Year	Weight in carats.	Value.
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

VALUE OF THE DIAMONDS AT THE MINES (GERMAN) PER CARAT

Year	[illegible]	Year	Value.
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]		

[illegible]

[illegible]

	[illegible]	Value in American currency at normal exchange.
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]

[illegible]

[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Diamonds and other precious stones—Production in foreign countries—Continued.

OTHER PRECIOUS STONES—Continued.

PRODUCTION OF JADE IN BURMA.

	Value.	
1916	£48,926	$238,100
1917	67,502	328,500

WEIGHT OF MATERIAL MINED IN 1916, 1917, 1918.

Jade	pounds..	1,303,818
Amber	do....	8,624

Diamonds, uncut (including miners', glaziers', and engravers', not set) (free)—Imports by countries (fiscal years).

Imported from—	1910	1911	1912	1913	1914 [1]
Belgium	$1,767,380	$1,010,649	$1,217,999	$2,129,987	$678,702
France	1,165,501	697,803	559,291	401,661	108,262
Germany	89,059	41,914	62,275	68,248	371
Netherlands	721,744	844,912	773,045	963,124	196,508
Switzerland				2,538	
United Kingdom	6,338,380	6,669,240	7,071,699	8,635,134	3,378,043
Canada	16,279	2,232	17,972	61,729	6,169
Mexico	36,887	3,313	25,869	1,245	
Argentina				700	
Brazil	18,014	8,270	73,934	70,232	
Australia	5	3		37	
British South Africa	13,349		578	4,918	
All other	66,006	2,607	851		
Total	10,232,604	9,280,943	9,833,513	12,339,553	4,368,055

[1] 1914 figures for period July 1–Oct. 2, 1913.

Gem diamonds, uncut—Imports by countries.

FISCAL YEARS.

Imported from—	1914 [1]	1915	1916	1917	1918
Belgium	$289,055	$5,332			
Denmark				$7,298	
France	11,998	5,175	$1,131	11,395	$12,364
Germany	279	1,375			
Netherlands	118,588	257,451	113,329	43,511	112,460
United Kingdom	2,694,940	2,770,814	10,675,870	10,782,705	11,973,387
Canada	14,286	149,213	20,453	26,079	94
Mexico	20				
Brazil	22,453	109,881	317,193	413,149	537,608
Japan	14				
British South Africa		58,939	315,153	433,038	275,938
Italy					14,618
Cuba					802
British Guiana					739
Siam					
All other					
Total	3,151,633	3,358,180	11,443,129	11,717,175	12,928,010

[1] 1914 figures for period from Oct. 4, 1913–June 30, 1914, inclusive.

Gem diamonds, uncut—Imports by countries—Continued.

CALENDAR YEARS.

Imported from—	1918	1919	1920
Belgium	.....	$2,913	.....
France	$163	22,818	.....
Italy	14,618	.....	.....
Netherlands	23,125	1,337,775	.....
United Kingdom	11,924,482	17,921,148	.....
Canada	94	22	.....
Cuba	802	.....	.....
Brazil	444,465	529,272	.....
British Guiana	.....	29,613	.....
Siam	.....	2,198	.....
British South Africa	197,777	469,999	.....
All other	.....	.....	.....
Total	12,605,526	20,315,758	$10,527,362

Diamonds; glaziers' and engravers', unset and miners' (free)—Imports by countries (fiscal years).

Imported from—	1914 [1]	1915	1916	1917	1918
France	$263,310	$20,423	$222,919	$167,493	$55,448
Netherlands	187,547	73,592	96,564	40,761	17,598
United Kingdom	59,073	107,523	42,427	136,248	311,376
Canada	12,773	10,860	1,618	.....	2,747
Brazil	52,045	37,919	367,935	587,379	656,254
British South Africa	.....	.....	.....	12,461	.....
Japan	3,331	1,470	6,618	3,975	.....
Oceania	.....	.....	.....	.....	1,241
All other	9,880	3,949	4,721	275	5,311
Total	587,959	255,736	742,802	948,592	1,049,975

[1] Period Oct. 4, 1913–June 30, 1914, inclusive.

Glaziers and engravers' diamonds, etc.—Imports by countries (calendar years).

Imported from—	1918	1919	1920
France	$37,877	$74,082	.....
Netherlands	20,510	164,747	.....
United Kingdom	264,425	203,024	.....
Brazil	386,136	542,528	.....
China	5,311	.....	.....
Australia	4,138	.....	.....
Total	718,397	984,381	$1,527,753

Other precious stones, uncut.[1]*—Imports by countries (fiscal years).*

Imported from—	1910	1911	1912	1913	1914
Austria-Hungary	$207	$21	$49	.....	.....
Belgium	2,895	.....	75	.....	.....
France	25,628	10,989	16,600	$7,613	$284
Germany	34,897	20,860	27,878	11,330	1,896
Italy	.....	.....	297	10	.....
Russia in Europe	.....	.....	716	.....	.....
Spain	1,831	.....	.....	.....	.....
Switzerland	15,792	16,995	16,730	11,062	.....
United Kingdom	171,697	86,481	20,083	2,003	1,887
North America	3,151	926	1,055	3,460	1,245
South America	303	.....	436	.....	.....
China	255	51	.....	.....	.....
British India	.....	3,286	.....	.....	.....
Other British East Indies	25,767	39,356	21,390	24,705	10,953
Japan	.....	136	4,587	.....	.....
Oceania	3,237	2,909	2,156	18,975	6,810
Africa	.....	.....	506	.....	10
Total	285,660	182,010	112,558	79,158	23,085

[1] 1914 figures cover period July 1 to Oct. 3, 1913, inclusive.

Other precious stones, uncut (dutiable)[1]*—Imports by countries (fiscal years).*

Imported from—	1914	1915	1916	1917	1918
Austria-Hungary	$74	$12			
France	2,266	15,454	$20,491	$29,768	$4,079
Germany	2,930	3,845	46,949	168	
Italy	12	5	20,274	2,363	159
Netherlands		527			
Switzerland				5,285	1,063
United Kingdom	3,805	3,617	22,351	4,385	47,306
North America	829	13	16		12,573
South America		3,449	14,383	32,994	21,488
All British East Indies	735	3,572	13,853	16,052	3,789
Other Asia	650	119	229	295	1,152
Oceania	3,359	29,965	19,397	53,942	21,575
Africa				306	
Total	14,660	60,578	157,943	145,558	113,184

[1] Figures for 1914 cover period from Oct. 4, 1913, to June 30, 1914, inclusive.

Other precious stones—Uncut—Imports by countries (calendar years).

Imported from—	1918	1919	1920
Belgium		$124	
France	$13,830	143,593	
Italy	159	1,051	
Netherlands	2,972	244,830	
Switzerland	306	696	
United Kingdom	478,820	997,093	
Canada	2,223	14,550	
Panama	2,131		
Mexico	92	1,359	
West Indies	10,225	600	
South America	35,933	118,200	
Asia	11,806	53,094	
Oceania	20,533	15,904	
Africa	25,520	32,428	
Total	604,550	1,623,522	$3,717,741

Pearls, and parts of, not strung or set.[1]*—Imports by countries (fiscal years).*

Imported from—	1911	1912	1913	1914	1915	1916
Belgium	$5,428	$982		$6		
France	711,503	1,417,852	$3,876,018	3,483,308	$600,309	$5,242,088
Germany	144,068	134,218	208,917	84,358	14,066	3,984
Italy	16	11,338	36,174	5,504	693	1,544
Netherlands	1,600	452		7,421	1,063	4,454
Switzerland	413		4,269		111	4,801
Turkey in Europe	5,064	8,121	2,873	2,884		
United Kingdom	259,700	487,489	1,639,721	632,598	996,912	4,683,347
Canada	250		2,733	74	3,623	528
Central America		140	1,175	4,800		1,498
Mexico	5,105	7,720	3,688	26,399	840	20,567
British West Indies	25	2,235	16	5	1,214	2,199
South America		905	1,148		3,068	16,969
China and Hongkong	88	83	373		264	3,061
Japan	6,869	16,423	28,570	14,778	14,643	47,457
Turkey in Asia	164	355	813	1,118	515	
Oceania		1,000	185	690	7,300	
All British East Indies					130	438,835
All other						2,719
Total	1,140,293	2,089,313	5,806,673	4,263,933	1,644,751	10,474,051

[1] Included in "Other precious and semiprecious stones, cut, but not set" prior to 1911.

Pearls, and parts of, not strung or set—Imports by countries (fiscal years)—Continued.

Imported from—	1917	1918	Calendar years.		
			1918	1919	1920
Belgium					(1)
France	$5,703,691	$474.363	$112,580	$5,982,654	$3,541,786
Germany					(1)
Italy	174	1,580	1,580		(1)
Netherlands				12,912	(1)
Switzerland	270				(1)
Turkey in Europe					(1)
United Kingdom	2,817,350	730,927	376,741	5,347,460	3,087,777
Canada	179	218		252	(1)
Central America [2]	850	38,300	46,400	38,404	(1)
Mexico	9,504	17,780	16,047	6,306	(1)
British West Indies	98				(1)
South America	1,569	1,373	250	502	(1)
China and Hongkong	21,331	4,642	336	38,899	(1)
Japan	39,947	4,613	12,969	2,608	(1)
All British East Indies	331,871	311,009	150,584	81,003	77,034
Turkey in Asia					(1)
Oceania	3,251	4,000	103,433	75,463	(1)
All other	1,853	736			195,075
Total	8,931,938	1,589,631	820,920	11,616,463	7,377,772

[1] No importations or included with "All other."
[2] Panama only, 1917–1918, fiscal years.

Diamonds and other precious stones: Diamonds, rough or uncut and not advanced in condition or value from their natural state by cleaving, splitting, cutting, or other process—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Ad valorem rate.
		Carats.				*Per cent.*
1907	Free		$10,792,908.00			
1908	do		4,021,816.00			
1909	do		3,983,131.00			
1910	do		9,767,640.43			
1911	do		9,071,089.00			
1912	do		9,484,049.00			
1913	do		11,973,764.00			
1914 [1]	do		4,266,110.00			
1914 [2]	10 per cent		3,150,606.00	$315,060.60		10.00
1915	do		3,204,206.00	320,420.60		10.00
1916	do		11,461,475.00	1,146,147.50		10.00
1917	do		11,864,421.00	1,186,442.10		10.00
1918	do		12,975,502.00	1,297,550.20		10.00
1918 [3]	do		12,636,024.00	1,263,602.40		10.00
1919 [3]	do		20,306,758.00	2,030,675.80		10.00
1920 [3]	do		10,526,125.00	1,052,612.50		10.00
1921 [4]	do		1,761,168.00	176,116.80		10.00

[1] July 1 to Oct. 3, 1913, under act of 1909.
[2] Oct. 4, 1913, to June 30, 1914, inclusive, under act of 1913.
[3] Calendar year.
[4] 6 months ended June 30, 1921.

Diamonds and other precious stones: Diamonds, miners', glaziers', and engravers', not set—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
1907	Free		$344,731.00			
1908	do		430,670.00			
1909	do		776,853.00			

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
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[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Diamonds and other precious stones [illegible]

Fiscal year	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
1907	Free		$320,[illegible]0			
1908	do		[illegible]			
1909	do		15,[illegible]4			
1910	do		8,[illegible]0			
1911	do		9,[illegible]0			
1912	do		10[illegible]0			
1913	do		9[illegible]0			
1914[1]	do		20,865.0			

[1] July 1 to Oct. 4, 1913, under act of 1909.

Bort [1]—Imports for consumption—Revenue.

Fiscal year:	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	[illegible]
1914[2]	10 per cent		$30,[illegible]	[illegible]		
1915	do		[illegible]	[illegible]		
1916	do		54,[illegible]	[illegible]		
1917	do		[illegible]	[illegible]		
1918	do		[illegible]	[illegible]		
1918[3]	do		[illegible]	[illegible]		
1919[3]	do		1,[illegible]	[illegible]		
1920[3]	do		3,[illegible]	[illegible]		
1921[4]	do		[illegible]	[illegible]		

[1] Returned under "Diamond dust or bort" prior to Oct. 4, 1913.
[2] Oct. 4, 1913, to July 1, 1914, under act of 1913.
[3] Calendar year.
[4] Six months ending June 30.

Diamonds and other precious stones: Other precious stones, rough or uncut, and not advanced in condition or value from their natural state by cleaving, splitting, cutting, or other process—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Ad valorem rate.
		Carats.				*Per cent.*
1907	Free		$156,327.00			
1908	do		113,242.00			
1909	do		274,250.00			
1910	do		282,810.00			
1911	do		180,012.87			
1912	do		112,957.00			
1913	do		75,614.00			
1914 [1]	do		23,085.00			
1914 [2]	10 per cent		16,445.15	$1,644.52		10.00
1914 [3]	10 per cent less 20 per cent.		75.00	6.00		8.00
1915	10 per cent		54,141.00	5,414.10		10.00
1916	do		167,331.00	16,733.10		10.00
1917	do		130,289.00	13,028.90		10.00
1918	do		104,656.00	10,465.60		10.00
1918 [3]	10 per cent less 20 per cent.		10,225.00	818.00		8.00
1918 [4]	10 per cent		129,959.00	12,995.90		10.00
1918 [4]	10 per cent less 20 per cent.		10,225.00	818.00		8.00
1919 [4]	do		219,526.00	21,952.60		10.00
1920 [4]	10 per cent		354,937.00	35,493.70		10.00
1921 [5]	do		82,756.00	8,275.60		10.00

[1] July 1 to Oct. 3, 1913, under act of 1909.
[2] Oct. 4, 1913, to June 30, 1914, under act of 1913.
[3] Reciprocity treaty with Cuba.
[4] Calendar years.
[5] Six months ended June 30, 1921.

Diamonds and other precious stones: Pearls, split, not otherwise provided for—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1908	20 per cent		$2,315.00	$463.00		20.00
1909	do		57.00	11.40		20.00

Diamonds and other precious stones: Pearls in their natural state, not strung or set—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
						Per cent.
1907	10 per cent		$1,593,498.00	$159,349.80		10.00
1907 [1]	75 per cent of 10 per cent.		8.00	.60		7.50
1908	10 per cent		515,478.00	51,547.80		10.00
1908 [1]	75 per cent of 10 per cent.		8.00	.60		7.50
1909	10 per cent		2,334,243.00	233,424.30		10.00
1909 [1]	75 per cent of 10 per cent.		20.00	1.51		7.50

[1] From Philippine Islands.

Diamonds and other precious and semiprecious stones, and imitations of: Cut, but not set, and suitable for use in the manufacture of jewelry—Pearls, and parts of, drilled or undrilled, not strung or set—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Number.				*Per cent.*
1910	10 per cent		$1,819,092.50	$181,909.25		10.00
1910 [1]	Free		150.00			
1911	10 per cent		1,130,453.50	113,045.35		10.00
1911 [1]	Free		2.00			
1912	10 per cent		2,082,637.00	208,263.70		10.00
1912 [1]	Free		651.00			
1913	10 per cent		5,800,465.00	580,046.50		10.00
1913 [1]	Free		325.00			
1914 [2]	10 per cent		2,673,548.00	267,354.80		10.00
1914 [3]	20 per cent		1,591,907.00	318,381.40		20.00
1915	do		1,551,597.00	310,319.40		20.00
1916	do		1,911,864.00	1,982,372.80		20.00
1916 [1]	Free		20,245.00			
1917	20 per cent		9,012,338.00	1,802,467.60		20.00
1917 [1]	Free		52,896.00			
1918	20 per cent		1,602,570.00	320,514.00		20.00
1918 [1]	Free		65,863.00			
1918 [4]	20 per cent		667,990.00	133,598.00		20.00
1918 [1 4]	Free		97,939.00			
1919 [4]	20 per cent		10,933,510.00	2,186,702.00		20.00
1919 [1 4]	Free		75,463.00			
1920 [4]	20 per cent		7,801,728.00	1,560,345.00		20.00
1921 [5]	do		1,360,253.00	272,050.00		20.00

[1] From Philippine Islands.
[2] July 1 to Oct. 3, 1913, under act of 1909.
[3] Oct. 4, 1913, to June 30, 1914, under act of 1913.
[4] Calendar year.
[5] 6 months ended June 30, 1921.

Agates, unmanufactured—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
1908	Free		$490			
1909	do		290			
1910	do		162			
1911	do		209			
1912	do		114			
1913	do		247			
1914	do		470			
1915	do		236			
1916	do		25			

Coral—Marine, uncut and unmanufactured—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				
1908	Free		$137			
1909	do		14,771			
1910	do		3,989			
1911	do		2,796			
1912	do		1,987			
1913	do		414			
1914	do		192			
1915	do		255			
1916	do		34			
1917	do		100			
1918	do		126			
1918 [1]	do		86			
1919 [1]	do	265	1,306		$4.92	
1920 [1]	do		1,389			
1921 [2]	do					

[1] Calendar year.
[2] 6 months ended June 30, 1921.

Jet, unmanufactured—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
1915	Free		$4,735			
1918	do		8,496			
1918 [1]	do		316			
1919 [1]	do		1,199			
1920 [1]	do		371			
1921 [2]	do					

[1] Calendar years. [2] 6 months.

Precious and semiprecious stones, uncut; pearls and parts thereof, not strung—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1883	687	Diamonds, rough or uncut, * * *	Free.
1883	480	Precious stones of all kinds	10 per cent ad valorem.
1883	688	Diamond dust or bort	Free.
1883	727	Jet, unmanufactured	Do.
1883	682	Coral, marine, unmanufactured	Do.
1883	596	Agates, unmanufactured	Do.
1890	453	Pearls	10 per cent ad valorem.
1890	557	Diamonds and other precious stones, rough or uncut, including glaziers' and engravers' diamonds not set, and diamond dust or bort, and jewels to be used in the manufacture of watches.	Free.
1890	620	Jet, unmanufactured	Do.
1890	547	Coral, marine, uncut, and unmanufactured	Do.
1890	476	Agates, unmanufactured	Do.
1894	337	Pearls, including pearls strung but not set	10 per cent ad valorem.
1894	338	* * *. And on uncut precious stones of all kinds	Do.
1894	467	Diamonds; miners', glaziers', and engravers' diamonds not set, and diamond dust or bort. * * *	Free.
1894	521	Jet, unmanufactured	Do.
1894	456	Coral, marine, uncut, and unmanufactured	Do.
1894	366	Agates, unmanufactured	Do.
1897	436	Pearls in their natural state, not strung or set	10 per cent ad valorem.
1897	545	Diamonds and other precious stones, rough or uncut, and not advanced in condition or value from their natural state by cleaving, splitting, cutting, or other process, including miners', glaziers', and engravers' diamonds not set, and diamond dust or bort.	Free.
1897	586	Jet, unmanufactured	Do.
1897	535	Coral, marine, uncut, and unmanufactured	Do.
1897	467	Agates, unmanufactured	Do.
1909	449	Pearls and parts thereof, drilled or undrilled, but not set or strung.	10 per cent ad valorem.
1909	555	Diamonds and other precious stones, rough or uncut, and not advanced in condition or value from their natural state by cleaving, splitting, cutting, or other process, including glaziers' and engravers' diamonds not set.	Free.
1909	598	Jet, unmanufactured	Do.
1909	546	Coral, marine, uncut, and unmanufactured	Do.
1909	485	Agates, unmanufactured	Do.
1909	556	Miners' diamonds, whether in their natural form or broken, and bort; any of the foregoing not set. * * *.	Do.
1913	357	Diamonds and other precious stones, rough or uncut, and not advanced in condition or value from their natural state by cleaving, splitting, cutting, or other process, whether in their natural form or broken, and bort, any of the foregoing not set. * * *.	10 per cent ad valorem.
		Pearls and parts thereof, drilled or undrilled, but not set or strung: * * *.	20 per cent ad valorem.
1913	474	Glaziers' and engravers' diamonds, unset, miners' diamonds	Free.
1913	520	Jet, unmanufactured	Do.
1913	463	Coral, marine, uncut, and unmanufactured	Do.
1913	390	Agates, unmanufactured	Do.

COURT AND TREASURY DECISIONS.

The court can not disregard the condition upon which the law makes the duty depend. Temporary stringing for facility in transportation only precludes classification as "not threaded or strung." (Frankenberg Co. *v.* United States, 206 U. S. 224, of 1907.) Under the rule that dutiable classification must be ascertained upon examination of the article in the condition in which it is imported, pearls ready for stringing and actually strung as a necklace before importation were held not pearls set or strung for tariff purposes, but "pearls in their natural state, not strung or set" (par. 436, act of 1897). The court also held that a prescribed rate of duty can not be escaped by disguise or artifice; but if an article imported is not the article described as dutiable at a specified rate it does not become dutiable under the description because it has been manufactured for the purpose of being imported at a lower rate. (United States *v.* Citroen, 223 U. S., 407, of 1912.)

Separate provision is made in the act of 1913 for beads, including imitation pearl beads, temporarily strung for facility in transportation only (par. 333), but none for pearls.

See Surveys on Precious Stones Advanced and on Imitation Precious Stones.

PRECIOUS AND SEMIPRECIOUS STONES, ADVANCED.

(See also U. S. T. C. Surveys on Uncut Precious Stones and Imitation Precious Stones.)

SUMMARY.

Description and uses.—Cut precious stones are crystals of various minerals which have been shaped or cut, and polished, to enhance their color and brilliancy. Diamonds, rubies, emeralds, sapphires, and opals are the most important and valuable of the precious stones, but many other minerals are used as gems, although the market in most cases is limited. Precious stones are used for ornamenting jewelry and novelty articles. The diamond is by far the most important precious stone and data contained in this survey applies to diamonds except where otherwise stated.

Domestic production.—The domestic production of gem minerals is small, but the domestic industry engaged in cutting gems of foreign origin, is well organized, and during 1919 (fiscal year) fully one-third of the gem imports were rough crystals which were cut in the United States. The manufacturing process is largely handwork, and the skill of the operator plays a large part in the successful operation of the industry. Fifty-eight to sixty-one per cent of the rough stone is lost in the cutting operation, but the waste is marketable for industrial and abrasive purposes.

The diamond cutting industry is carried on principally in and about New York City, and is conducted in both small and large shops. Expert diamond cutters command salaries of over $100 per week.

Foreign production.—Amsterdam and Antwerp have always been the world's largest precious stone cutting centers. In Europe, the industry is carried on in both large and small shops, and in many cases the workers are confined to members of the cutter's family.

The war eliminated Belgium and greatly curtailed the industry in Holland because of the scarcity of raw material. As diamond production was resumed in South Africa, the Dutch, French, English, and especially the United States cutting industry expanded to supply the demand formerly satisfied by the Belgians. The Belgian industry is now operating again. The English cutting industry profited by the war and Great Britain is taking steps to retain the advantage gained.

Imports.—Imports of gems fluctuate with the prosperity of the country. There has been a general increase in the value of rough material. In 1910 importations of rough stones were 22.8 per cent of the total, and in 1919 33.5 per cent. Imports of cut stones during 1914, 1918, and 1919 were valued at approximately $20,000,000, $8,700,000, and $69,000,000, respectively.

Prices.—The value of a gem varies with the variety, size, cutting, color, and the freedom from flaws.

Tariff history.—High duties on precious stones result in extensive smuggling operations, and for this reason the duties on gems have always been held at a comparatively low level. In the act of 1894 finished gems were dutiable at 25 per cent, and at present they are dutiable at 20 per cent, but in the other acts since 1883 a uniform rate of 10 per cent was maintained. Rough stones were on the free list in the tariff acts of 1883, 1890, 1897, and 1909. In the acts of 1894 and 1913 they were made dutiable at 10 per cent.

Competitive conditions.—The domestic cutter competes actively and successfully with the European under present conditions, at least on material legitimately imported, but the European cutter is able to work up smaller stones and chips, thus obtaining larger profit from his waste material. The cutting of chips and very small stones is, in some cases, performed by women or by apprentices in the trade.

That part of the industry working on precious stones other than diamonds is highly organized abroad, but the domestic industry can compete in this field under normal conditions. Total importations of cut stones during the period 1910–1919 were valued at twenty times the value of rough stones imported, but rough material of this character is quite inexpensive, and domestic production is considerable.

Tariff considerations.—The more precious gems (diamonds, emeralds, natural rubies, natural blue sapphires, opals, and pearls) are very valuable per unit of size or weight and are easily concealed about the person. A high duty encourages smuggling and in the end demoralizes the market by discouraging legitimate importations. In the last year of the period 1894 to 1897, when duties were 25 per cent on cut stones and 10 per cent on rough material, the revenue from gem duties was less than that during the fiscal year 1894, when the duty was 10 per cent.

All branches of the gem and jewelry industry (cutters, importers, wholesalers, and retailers) are united in favor of a tariff of not over 10 per cent on the most precious cut stones.

It would appear that higher duties on precious stones other than diamonds, blue sapphires, rubies, emeralds, opals, and pearls would not result in excessive smuggling, but as the imports are largely individual stones of great beauty the value per carat often places them in the same class with diamonds. Furthermore higher duties on these so-called semiprecious stones would seriously affect the export market for the fine jewelry in which these stones are mounted.

GENERAL INFORMATION.

ɔ also T. I. C. surveys of uncut precious stones and imitation ıus stones.)

TARIF ACT OF 1913.

'. 357. * * *; diamonds, coral, rubies, cameos, and other ıus stones and semiprecious stones, cut but not set, and suitable ıe in the manufacture of jewelry, 20 per cent ad valorem.

DESCRIPTION AND USES.

t precious and semiprecious stones are crystals of various min- which have been cut and polished to enhance their color and ıncy. Rubies and diamonds are true precious stones. Coral is nell of a marine crustacea. Cameos are precious stones (usually) which have been carved in relief. The Italian cameos con- f a light and a dark layer of mineral. This is carved so that one forms the relief carving and the other the background.
t gems are used for ornamentation on jewelry and expensive lty articles. Precious stones which are to be used for industrial ɔses are manufactured by rough shaping; these products are ed in the survey on uncut precious stones.

DOMESTIC PRODUCTION.

ıe crude, rough crystals of mineral used for gems are found in all ɜ of the world, as described in the survey on uncut precious stones. rough stones are sent to cutting centers and very few, if any, are ıt the point of origin.
aterials.—Rough crystals of the gem mineral are used as raw ɔrial. Lead or cement is used to hold the crystal during the ng and polishing operation, and diamond dust or other abrasive ed for shaping the stone.
quipment.—Very simple machines are used for grinding and pol- g the faces of the crystal. Handwork is the most important of the procedure, and the cutter's success depends on his obtain- he maximum possible weight of cut gem from his raw material. crystals are sawed by a disk of metal impregnated with diamond

ethods of manufacture.—Rough diamond crystals are first care- inspected for flaws and irregularities and then split along the ral cleavage planes. In this operation it is often possible to inate flaws so that perfect cut stones can be produced from ɔd, rough material. The divisions formed by the first splits are ɔrked up into gems if of sufficient size. The later splits and d fragments produce slivers of crystal that are used for glaziers' engravers' diamonds or are ground to powder for abrasive pur- ɜ.
ıe roughly shaped gem is imbedded in a cake of lead or cement roughly shaped by grinding it against another diamond. The ɜs are cut by pressing the stone against a revolving table covered diamond dust and oil. The stone must be reset for grinding quarter and the cutter is the sole judge of the amount of grind-

ing necessary. In a trade of this kind where a slight error of judgment may spoil a stone worth thousands of dollars, skilled labor commands a high price and wages run over a hundred dollars a week. A perfectly cut stone contains 64 facets besides the table.

Emeralds, rubies, and other precious stones are cut in various shapes to bring out the color and brilliance. They are softer material, and are more easily shaped. Carborundum dust is used instead of diamond dust for cutting and the facets are polished with tripoli powder.

A skillful cutter will produce cut diamonds weighing from 39 to 42 per cent of the weight of the rough crystal. The shape of the raw material and the prevalence of imperfections plays a large part in the possible recovery and cut stones weighing as little as 30 per cent and as much as 50 per cent of the weight of the rough stone are by no means uncommon.

Organization.—The diamond and precious-stone cutting industry is operated in both large and small units. Most of the rough diamonds are bought from the British diamond syndicate, and for this reason there is eager competition for places on the mailing list of that organization. The syndicate offers the stones in assortments at a fixed price and the cutters are forced to accept the syndicate valuation sight unseen or lose their place on the list. Large quantities of diamonds are sold rough by the original purchasers, but this source of supply is uncertain.

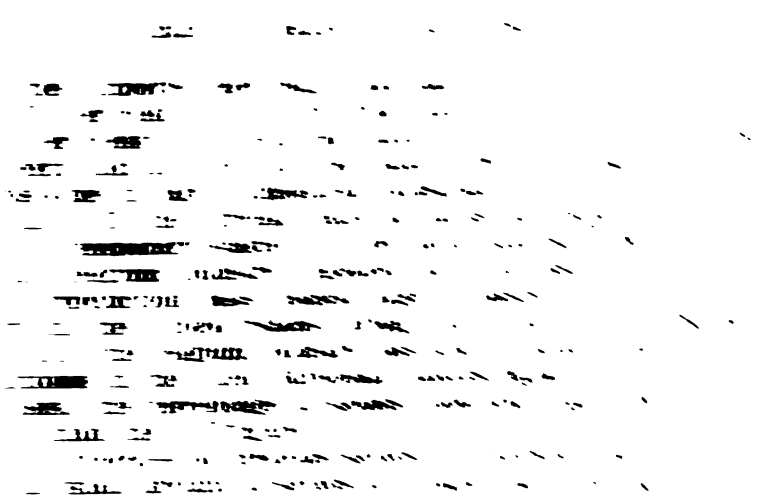
Geographical distribution.—The precious-stone cutting establishments are concentrated in and about New York City. A few cutting establishments are located in other districts, but the total weight of diamonds cut outside is small. The shops outside the New York district specialize on semiprecious stones.

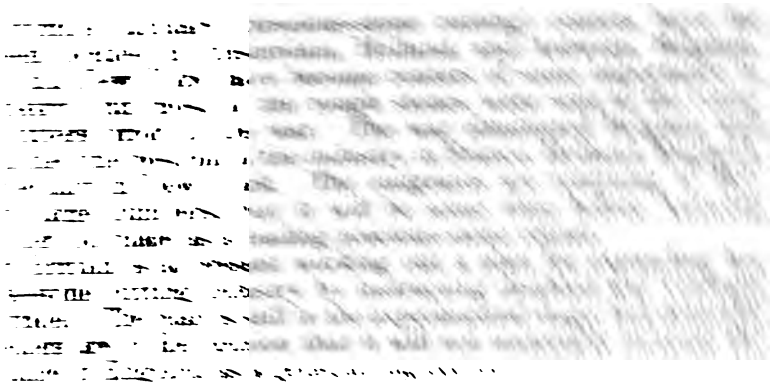
History of the industry.—Precious stones were practically all cut abroad until about 1875. The expanding market for cut stones (especially diamonds) in the United States and the 10 per cent domestic duty on cut stones caused Belgium and Dutch cutters to locate in New York. The large jewelry houses installed cutting establishments to handle their special trade, and the cutters, recruited abroad, often opened shops of their own after a period of employment with the store that brought them to this country.

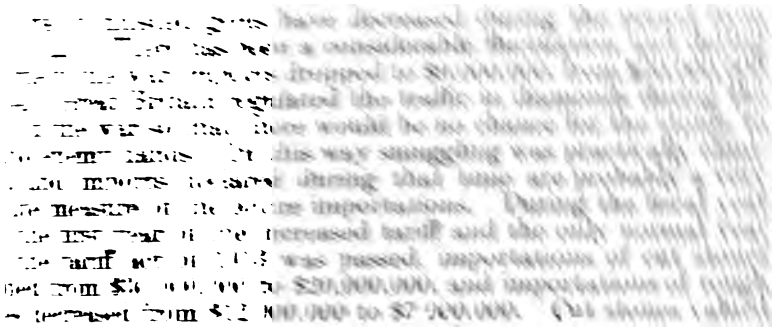
The industry suffered a reverse in 1896–97, but since that time has grown steadily. At present fully a third of all the precious stones sold in the United States are cut in New York.

At the outbreak of the war large numbers of the Belgian cutters migrated to Holland, England, and to the United States. This has resulted in a surplus of labor in the New York market, but the condition is temporary, as most of the Belgian refugees are returning to Belgium.

Domestic production and consumption.—Although the United States absorbs more diamonds than any other nation, the domestic production of gem material is very small. The domestic cutting industry, on the other hand, has increased steadily, and New York is fast becoming one of the world's great precious-stone cutting centers. There are no data available by which the number of carats of cut stones produced here can be determined, but import valuations of rough and cut material show the ratio between the values of the imports of each kind. In 1910 (fiscal year), 22.8 per cent of the







Total importation of cut and rough stones in fiscal year 1894 (low tariff) were $4,900,000, and in 1897 were only $2,200,000. During the 3-year period importations of cut stones decreased steadily. There was a temporary increase in the importations of rough stones, but in 1897 importations decreased rapidly and duties collected were less than in 1894.

After the passage of the act of 1897 reducing the duty on cut stones to 10 per cent and restoring rough material to the free list, imports increased to almost $6,900,000 per annum, and duties collected were greater by $20,000 than in 1897. Part of the violent fluctuations during the period were due to unsettled industrial conditions, but smuggling was the chief influence at work. During the period 1883 to 1894 gem importations averaged over $10,000,000 per year.

PRICES.

No standard prices on diamonds and other precious stones are recognized in the trade. Small stones possessing no distinctive features are standardized to some extent, but in dealing with the larger stones, color, freedom from flaws, shape, and other factors enter into the determination of value.

In general the value of a dimaond is greatest when the stone is white or has a blue tint, is free from flaws, and perfectly cut. Matched stones are more valuable than single stones of the same size.

TARIFF HISTORY.

Because of the fact that gems are easily concealed, and therefore may be smuggled with great ease, the duties on gems have always been comparatively low, although they are purely luxury articles. The duty on cut stones was 25 per cent under the act of 1894 and is 20 per cent at present, but under the acts of 1883, 1890, 1897, and 1909 the duty was only 10 per cent.

Rough stones are dutiable at 10 per cent under the act of 1913. In 1894 the duty on crude stones was the same as at present, but in every other act since 1883 this material was on the free list.

COMPETITIVE CONDITIONS.

The skill of the worker is an important factor in the competitive position of the gem-cutting industry. A cutter recovering 40 per cent of his raw material as finished gems has a better chance than one saving only 35 per cent, and in many cases the extra weight saved will go far toward paying the cost of cutting. In Europe the industry is carried on in both large and small units; in fact, a large part of the business is carried on in the home of the cutter and at leased benches in large shops. The man of the house does all splitting and grinding on the larger stones, while apprentices work up the smaller gems produced by the splitting operation. This method of conducting the industry, together with the lower scale of living, enables the foreign workers to cut smaller and less valuable stones than can be profitably handled in the United States. Wages in Amsterdam in 1920 are about 45 per cent of those paid in the United States.

e of great value and are easily concealed about the person. ent great possibilities to the professional and amateur and in any discussion of the tariff situation it is well to the effect of extensive smuggling on the legitimate im- on the revenue accruing to the Government.

ically, an increase in the duty rate would result in increased but in practice, if the increased rate is above a low percent- continued over a period of years the opposite occurs. Gem timate that smuggling increases faster than the duty. That ing the duty causes four times the smuggling that occurs wer rate. The smuggler is able to undersell legitimate im- and the amount of legitimate importations decrease because rter no longer has a stable market. As the legitimate stocks , the demand for smuggled goods increases and is followed by r increase in the amount smuggled. This movement may e so marked as to reduce the revenue to a point below that l under the lower rate. The effect, furthermore, is to demor- e market and to foster friction with the Government among iest importers who feel that they are entitled to protection the smuggled goods. The domestic cutter is in little better n than is the importer of cut stones unless the uncut material ie free list. The smuggler has an advantage, then, if manufac- costs abroad are lower than in the United States. Any duty rough stones operates as a direct handicap to the cutter.

ail sales of gems abroad are easily traced, and for this reason erage citizen buying precious stones for his own use has small e of evading the duty. The professional smuggler, however, nis stones from the cutter; the sales are seldom if ever reported, he customs officials have no advance warning. Unless the gler is known, the chance of his being apprehended is very [1]

e precious stone and jewelry industry is unanimously in favor w duties, preferably not over 10 per cent on cut stones. Cutters, rters, wholesalers, and retailers, all agree that higher duties result tually in low revenue returns to the Government and a disor- zed domestic industry.

iamonds, natural rubies, emeralds, natural blue sapphires, pearls, possibly opals, are the only stones which ordinarily are valuable ugh to pay the smuggler for the risk he runs. The other stones y be made dutiable at a rate comparable to that levied on other ely luxury articles without endangering the domestic market or reasing the revenues accruing to the Government. The European ters dominate the semiprecious stone industry under present con- ions and imports of cut stones other than diamonds average over ,000,000 as compared with about $100,000 imported in the rough ate.

Against this reasoning it must be said that higher duties on semi- ecious stones would seriously affect the export market for fine welry in which these stones are set.

[1] Interviews with trade (corroborate), Tariff Hearings on this subject.

Dealers assert that imports of cut stones other than diamonds consist largely of the more precious stones as named above, together with other gems which because of their great beauty or individual characteristics may be placed in the same class.

In order to encourage the gem cutting industry in South Africa, the Government of that colony does not collect the 10 per cent duty, ordinarily levied on exports of diamonds, if the material is exported as cut gems. This provision gives the South African cutter a 10 per cent advantage over the European cutter, and a 20 per cent advantage over cutters located in the United States, when competing in the European market.

Lapidary (precious and semiprecious stone cutting) work—Production in the United States.

[Census figures.]

	Establishments.	Workers, average.	Capital.	Wages.	Materials, cost.	Products, value.	Value added.
YEAR.							
1914	89	584	$3,613,000	$641,000	$3,941,000	$5,360,000	$1,419,000
1909	77	627	4,808,000	889,000	6,560,000	9,173,000	2,613,000
1904	54	507	2,384,000	657,000	6,224,000	7,647,000	1,423,000
1899	60	498	3,087,000	499,000	4,656,000	5,786,000	1,130,000
1889	29	92	101,000	59,000	125,000	316,000	191,000
1879	55	252	177,000	142,000	226,000	544,000	318,000
1869	13	88	34,000	39,000	37,000	107,000	70,000
1859	7	29	13,000	15,000	14,000	37,000	23,000
STATES, 1914.							
California	12	11	27,000	11,000	7,000	39,000	32,000
Illinois	6	28	182,000	27,000	70,000	127,000	57,000
Montana	3		9,000		2,000	10,000	8,000
New York	[1] 45	462	2,997,000	550,000	3,502,000	4,704,000	1,202,000
Pennsylvania	5	16	12,000	12,000	31,000	54,000	23,000
All other	18	67	386,000	41,000	329,000	426,000	97,000

[1] Diamonds almost exclusively.

Diamonds, cut, not set (dutiable)—Imports by countries (fiscal years).

Imported from—	1910	1911	1912	1913	1914	1915
Austria-Hungary	$3,882	$1,488	$1,685	$1,071		$5,057
Belgium	11,253,536	10,440,556	9,225,468	11,997,091	$8,554,518	971,576
Denmark				4,087		
France	4,238,421	2,913,594	3,903,002	2,483,290	1,506,103	517,655
Germany	180,085	99,352	89,347	254,295	86,601	16,063
Italy	252	5,930	3,665	7,028	1,613	3,542
Netherlands	11,492,754	9,330,157	9,601,027	10,852,525	6,998,265	5,552,369
Russia in Europe			131		840	
Switzerland		3,413	2,275	545	6,865	2,019
United Kingdom	2,346,794	1,591,019	1,692,495	1,583,241	539,895	1,168,550
Canada	20,421	19,461	16,840	24,265	96,778	210,835
Panama	3					
Mexico		448	299	2,700		
Cuba				2,909		
Brazil	276	1,859			3,621	
Asia		18	912			
Oceania	3,650		4			
All other						4,451
Total	29,540,074	24,407,295	24,537,150	27,213,047	17,795,099	8,452,117

ls, cut, not set (dutiable)—Imports by countries (fiscal years)—Continued.

ted from—	1916	1917	1918	1918 [1]	1919 [1]	1920 [1]
gary						
	$67,734				$1,793,815	
	246,994	$197,928			23,627	
	1,679,003	1,406,008	$712,434	$170,441	2,033,268	
	28,018	47,349				
			1,749	1,749		
	16,421,593	17,855,620	11,306,989	6,266,319	53,561,019	
irope						
	23,453	131,252	23,044	9,954	32,064	
dom	1,817,369	2,152,912	1,867,073	1,308,941	6,664,911	
	59,292	28,424	3,665	852	59,600	
					1,275	
	2,600	90	550	1,100		
	30,347	4,658			3,361	
	171,165	12,708	5,974		27,969	
	5,740	15,316	2,600			
			222			
	23,914	3,470	5,472	2,454	22,038	
	20,567,222	21,855,735	13,929,772	7,761,810	64,222,947	$45,240,013

years.

ious and semiprecious stones, cut, but not set—Imports by countries (fiscal years).

orted from—	1910	1911	1912	1913	1914	1915
ngary	$1,046,422	$1,070,565	$11,645	$35,029	$48,561	$18,215
	4,716	17,346	3,468	21,080	10,386	32,195
	4,348,809	3,099,173	2,212,251	1,727,317	1,317,693	231,786
	702,911	491,378	216,247	236,902	227,792	83,995
	38,838	150,653	222,570	155,298	394,618	162,719
s	5,034	3,130	1,022	534	1,556	8,284
l	747	2,404	2,344		1,055	18,719
gdom	1,512,836	768,609	835,360	582,832	539,939	202,149
	74	577	8,371	136	3,137	679
	9,725	6,123	3,598	1,499	1,300	2,209
rica	2,470	214				
Hongkong	566	461	3,812	339	872	1,438
East Indies	3,893	2,495	7,801	3,892	10,050	6,209
	13,499	3,017	6,303	1,951	2,378	1,308
	7,803	2,218	8,867	2,813	5,648	2,713
		865			688	
	3,584	3,368	521	2,328	146	1,244
l	7,701,927	5,622,596	3,544,180	2,771,950	2,565,819	773,862

ported from—	1916	1917	1918	1918 [1]	1919 [1]	1920 [1]
ungary	$2,335	$2,658		$50,662	$102,092	
					327	
	795,366	1,184,024	$378,667	210,408	1,945,036	
	35,857	12,281	977		145,126	
	262,979	530,244	410,687	477,163	814,008	
ds	48,221	1,116	17,142	51,534	729,196	
d	39,426	62,748	51,518	39,312	176,560	
ngdom	358,709	379,236	207,024	91,599	916,673	
	408	6,560	1,794	1,243	1,163	
	1,221	1,094	309	129	960	
erica		10,943	807	807	1,245	
Hongkong	1,383	14,853	15,787	6,777	136,157	
East Indies	23,537	102,667	47,937	24,821	23,890	
	315	7,038	3,317	649	992	
	20,104	27,280	4,691		3,253	
				164		
	2,209	31,156	14,665	12,826	9,354	
al	1,592,070	2,373,938	1,155,322	968,094	5,006,032	$5,010,563

ar years.

Diamonds and other precious stones: Advanced in condition or value from their natural state by cleaving, splitting, cutting, or other process, and not set—Imports for consumption—Revenue.

Fiscal years.	Rates of duty.	Quantity.	Value.	Duties collected.	Value per unit of quantity.	Ad valorem rate.
						Per cent.
1907	10 per cent		$23,933,369.00	$2,393,336.90		10.00
1908	do		9,322,518.60	932,251.86		10.00
1909	do		19,278,864.00	1,927,886.40		10.00
CUT, BUT NOT SET, AND SUITABLE FOR USE IN THE MANUFACTURE OF JEWELRY—DIAMONDS.						
1910	10 per cent		$29,466,595.50	$2,946,659.35		10.00
1911	do		24,390,076.46	2,439,007.64		10.00
1912	do		24,511,823.00	2,451,182.30		10.00
1913	do		27,170,996.00	2,717,099.60		10.00
1914 [1]	do		8,131,139.00	813,113.90		10.00
1914 [2]	20 per cent		9,606,139.00	1,921,227.80		20.00
1915	do		8,437,782.00	1,687,556.40		20.00
1916	do		20,574,717.00	4,114,943.40		20.00
1916 [3]	20 per cent less 20 per cent.		30,347.00	4,855.52		16.00
1917	20 per cent		21,869,289.00	4,373,857.80		20.00
1917 [3]	20 per cent less 20 per cent.		4,658.00	745.28		16.00
1918	20 per cent		13,868,995.00	2,773,799.00		20.00
Calendar years.						
1918			7,734,150.00	1,546,830.00		20.00
1919	20 per cent	524,700	64,084,950.00	12,816,990.00	$122.00	20.00
1919 [3]	20 per cent less 20 per cent.	10	660.00	105.60	66.00	16.00
1920	20 per cent		45,240,013.00	9,048,002.00		20.00
1921 [4]	do		12,088,928.00	2,417,785.00		20.00

[1] July 1 to Oct. 3, 1913, under act of 1909.
[2] Oct. 4, 1913, to June 30, 1914, under act of 1913.
[3] Reciprocity treaty with Cuba.
[4] Six months ended June 30, 1921.

OTHER PRECIOUS STONES.

1907	10 per cent		$4,608,210.57	$460,821.08		10.00
1907 [1]	75 per cent of 10 per cent.		360.00	27.00		7.50
1908	10 per cent		1,586,095.90	158,609.62		10.00
1909	do		1,705,904.04	170,590.44		10.00
1909 [1]	75 per cent of 10 per cent.		5.00	.38		7.50

[1] From Philippine Islands.

nd other precious and semi-precious stones, and imitations of: Cut but not uitable for use in the manufacture of jewelry—Coral, rubies, cameos, and ious and semi-precious stones—Imports for consumption—Revenue.

s.	Rates of duty.	Quantity.	Value.	Duties collected.	Value per unit of quantity.	Ad valorem rate.
						Per cent.
.....	10 per cent.....	.....	$4,419,929.87	$441,993.01	.....	10.00
.....	10 per cent-20 per cent.	.....	7.00	.56	.....	8.00
.....	10 per cent.....	.....	4,058,688.52	405,868.85	.....	10.00
.....	10 per cent-20 per cent.	.....	8.00	.64	.....	8.00
.....	10 per cent.....	.....	3,463,664.08	346,366.43	.....	10.00
.....	.....do.....	.....	2,774,220.73	277,422.07	.....	10.00
.....	.....do.....	.....	1,084,320.35	108,432.04	.....	10.00
.....	20 per cent.....	.....	1,443,736.49	288,747.30	.....	20.00
.....	.....do.....	.....	762,304.00	152,460.80	.....	20.00
.....	.....do.....	.....	1,504,815.00	300,963.00	.....	20.00
.....	20 per cent-20 per cent.	.....	162.00	25.92	.....	16.00
.....	20 per cent.....	.....	2,341,182.00	468,236.40	.....	20.00
.....	.....do.....	.....	1,158,479.00	231,695.80	.....	20.00
ears.						
.....	20 per cent.....	.....	956,939.00	191,387.80	.....	20.00
.....	.....do.....	.....	4,935,287.00	987,057.40	.....	20.00
.....	.....do	.....	5,010,563.00	1,002,112.60	.....	20.00
.....	.....do	.....	1,350,194.00	270,038.00	.....	20.00

ity treaty with Cuba.
) Oct. 3, 1913, under act of 1909.
[3] Oct. 4, 1913, to June 30, 1914, under act of 1913.
[4] 6 months ended June 30, 1921

Precious and semiprecious stones, cut but not set—Rates of duty.

ar.	Tariff classification or description.	Rates of duty, specific and ad valorem.
480	Precious stones of all kinds.....	10 per cent ad valorem.
454	Precious stones of all kinds, cut but not set.....	Do.
338	Precious stones of all kinds, cut but not set, * * *	25 per cent ad valorem; * * *
	Imitations of precious stones, not exceeding an inch in dimensions, not set.	10 per cent ad valorem.
435	Diamonds and other precious stones advanced in condition or value from their natural state by cleaving, splitting, cutting, or other process, and not set.	Do.
	Imitations of diamonds or other precious stones, composed of glass or paste, not exceeding an inch in dimensions, not engraved, painted, or otherwise ornamented or decorated, and not mounted or set.	20 per cent ad valorem.
449	Pearls and parts therof, drilled or undrilled, but not set or strung	10 per cent ad valorem.
	Diamonds, coral, rubies, cameos, and other precious stones and semiprecious stones, cut but not set, and suitable for use in the manufacture of jewelry.	Do.
	Imitation precious stones, including pearls and parts thereof, for use in the manufacture of jewelry, doublets, artificial, or so-called synthetic or reconstructed pearls and parts thereof, rubies, or other precious stones.	20 per cent ad valorem.
357	Diamonds and other precious stones, rough or uncut, and not advanced in condition or value from their natural state by cleaving, splitting, cutting, or other process, whether in their natural form or broken, and bort; any of the foregoing not set, and diamond dust.	10 per cent ad valorem.
	Pearls and parts therof, drilled or undrilled, but not set or strung; diamonds, coral, rubies, cameos, and other precious stones and semiprecious stones, cut but not set, and suitable for use in the manufacture of jewelry.	20 per cent ad valorem.
	Imitation precious stones, including pearls and parts thereof, for use in the manufacture of jewelry, doublets, artificial, or so-called synthetic or reconstructed pearls and parts thereof, rubies, or other precious stones.	Do.
	Small pieces of jade cut into oval, round, diamond, and square shapes, and small pieces carved to imitate a dog or other small animal on a pedestal, the former set into rings and the latter used for watch charms, were also held dutiable at the 20 per cent rate under paragraph 357 of the act of 1913. (Abstract 38702, of 1915.)	

COURT AND TREASURY DECISIONS.

Precious and imitation precious stones may be imported in the mails. (T. D. 36718, of 1916; T. D. 37384, of 1917.) The court can not judicially know that opals described by the evidence, without samples, as having one surface cut and polished are "rough or uncut, and not advanced in condition or value from their natural state by cleaving, splitting, cutting, or other process." (Wells *v.* United States, 7 Ct. Cust. Appls., 346, of 1916.) Coral cut or made globular into a bead is "cut" within paragraph 357; and coral beads graded as to size and temporarily strung are "not set." The term "beads of all kinds" in paragraph 333 does not include any of that class of beads constituting jewelry or material for use in the making of jewelry. (United States *v.* Bartiroma, 9 Ct. Cust. Appls., 183, T. D. 38003, of 1919.) Reduction of a precious stone to the desired form and condition for use in the manufacture of jewelry is "cutting" within paragraph 357. (United States *v.* Battiloro, 9 Ct. Cust. Appls., 180, T. D. 38002.) Industrial diamonds (filieres diamant), drilled for use as wire drawing dies, come within paragraph 357 of the act of 1913 as "bort." (Abstract 42946, of 1919, T. D. 43545.) Rough uncut pieces of diamonds of a cheap variety which may be used for engraver's points or for diamond drills after the points are sharpened, commercially known as "bort," are also bort within paragraph 357 and not exempt from duty as engraver's diamonds under paragraph 474. (G. A. 7839, T. D. 36048, of 1916.)

Beads of precious or semiprecious stones are dutiable under paragraph 357 at a lower rate than paragraph 333 imposes on other beads.

Semiprecious stones are specified in connection with precious stones cut but not set, but not with precious stones rough or uncut.

Bort, a general name for industrial diamonds, is dutiable under paragraph 357, while glazier's, engraver's, and miner's diamonds are exempt from duty under paragraph 474. Diamond dust is for the same class.

(See list survey upon imitation precious stones and jewelry.)

The term "precious stones" was held to be a trade term which includes "not only the diamond, sapphire, emerald, pearl, opal, and turquoise, but also the garnet, beryl, topaz, rock crystal, lapis lazuli, agate, onyx, jade, amethyst, tiger-eye, chalcedony, bloodstone, moonstone, tourmaline, chrysoprase, etc." Small cups, shoe-hook and glove-hook handles, knife handles, paper weights, seals for mailing boxes and for blotting papers and similar articles made of agate or of onyx were held dutiable by similitude as precious stones being identical in material with well-known kinds of precious stones although advanced by their manufacture into specific commercial articles beyond the condition of precious stones. Hahn *v.* United States, 107 Fed., 95, following Erhardt *v.* Hahn, 57 Fed., 271, applying "precious stones" to the mineral substances and not to articles made therefrom. The Hahn case was further followed as to manufactures of jade, except that the articles were classified as articles composed of mineral substance. Tiffany *v.* United States, 120 Fed., 255.

es and tourmalines, being whole mineral substances family of precious stones of a like green color with ty of 3 to 3.25 and hardness of 7.5, are of the same emerald and other highly prized gems, and even if im- e rough are precious stones within paragraph 357 of 13. G. A. 8382, T. D. 38519.)

nder the act of 1913, small pieces of jade cut into oval, ond, and square shapes, and small pieces carved to g or other small animal on a pedestal, the former being s and the latter used for watch charms, were classified, d in the manufacture of jewelry, under paragraph 357, ler paragraph 98 as articles composed wholly or in chief niprecious stones. (Abstract 38702.)

intended for bearings for electrical instruments were le as precious stones under paragraph 435 of the act of than as articles composed of mineral substances under 97. (United States v. American Express Co., 147 Fed., small pieces of Ceylon sapphires in the form of rough ed V or cut jewelry and used as bearings for electric other electric measuring instruments were declared to be precious and not semiprecious stones and were held to under paragraph 95 of the act of 1909 as "articles com- arthy or mineral substances" and not within paragraph niprecious stones, cut but not set," by similitude. (United eneral Electric Co., 4 Ct. Cust. Appls., 287.)

d "set" as used in the provision in paragraph 435 of the 7 for "diamonds and other precious stones advanced in or value from their natural state by cleavings, splitting, other process, and not set," was declared to have a well- d well-defined trade meaning in connection with precious ich would not include an agate bearing in a scale, and the was held to be intended to cover only precious stones y purposes and to exclude such as were fitted for use as (Smith v. Computing Scale Co., 147 Fed., 890.) But pal balls about one-fourth of an inch in diameter and ock crystal rondelles, or small, flat faceted disks, were ome within the provision for precious stones in paragraph e act of 1897 rather than within the provision for "beads ds" in paragraph 408. (United States v. American Gem l Co., 142 Fed., 283.) Rock crystal intaglios, produced pensive manner by engraving, and then painted, were held under the act of 1897, paragraph 135, as precious stones l in condition or value * * * by * * * cutting process regardless of their advancement in value by paint- nited States v. Benedict, 145 Fed., 914.)

nit of weight for diamonds, pearls, and other precious stones etric carat of 200 milligrams. (T. D. 33562, of 1913.)

lso surveys on precious stones and pearls, not advanced, and n precious stones.)

IMITATION PRECIOUS STONES.

SUMMARY.

Very few imitation gems (precious stones and pearls) are manufactured in the United States. The bulk of the supply is imported from France, Switzerland, and Bohemia (Czechoslovakia), where the industry has been brought to an advanced state of perfection.

Imitation gems are used in the manufacture of jewelry and may be classified with parts of jewelry (par. 356). The value per unit is small and high duties are little or no incentive to smugglers.

(See Tariff Commission surveys on precious stones.)

GENERAL INFORMATION.

TARIFF ACT OF 1913.

Par. 357. Imitation precious stones, including pearls and parts thereof, for use in the manufacture of jewelry, doublets, artificial or so-called synthetic or reconstructed pearls and parts thereof, rubies or other precious stones, 20 per cent ad valorem.

DESCRIPTION AND USES.

Imitation precious stones are usually glass replicas of the more valuable precious stones. The skill of the ceramist has developed into an art in this branch of the industry and the stones produced can be distinguished from the genuine gems only after delicate tests of their hardness and index of refraction. Glass imitations are made of every known gem.

Synthetic or "reconstructed" stones differ from the imitation article in that they are of the same composition as the true gem and are frequently produced by melting powder from the gem mineral in an oxyhydrogen flame. Some specimens of synthetic rubies and sapphires resemble the mined gem so closely that experienced gem experts have great difficulty in distinguishing one from the other. Sapphires and rubies are the most important stones produced in this way.

Imitation pearls have been made for years from small glass globes coated on the inside with the microscopic scales of a European fish. These imitations are well made but can be detected easily. Recently other processes have been perfected which, the originators claim, duplicate the natural growth of the pearl in the oyster. These pearls are beautiful specimens and sell for good prices. They are more expensive to produce than the fish-scale varieties but are better imitations and their detection requires the services of an expert. The industry manufacturing this material is still in the experimental stage.

Imitation precious stones and pearls are used for decorating cheap jewelry and novelties.

DOMESTIC PRODUCTION.

The United States has never been an important producer of imitation precious stones, and the domestic production is small.

ears, however, domestic manufacturers have produced
quantities of imitation pearls, but no stable industry
veloped.

RAW MATERIALS.

he most important raw material used in the manufacture
precious stones. The variety of glass used contains a
ntage of lead which increases the index of refraction and
brilliancy of the stone. Very small percentages of other
and oxides are added to produce the color desired. In
acture of synthetic sapphires and rubies chemically pure
oxide is used together with a small amount of metal salt
ring agent. Dust and chips from cutting natural gems
be employed.

EQUIPMENT.

olds are used of about the size and shape of the finished
ne finishing is done on revolving tables covered with abra-
er. Hand work predominates but automatic machinery is
some varieties of imitation stones. The manufacture of
gems requires a delicate apparatus surrounding an oxy-
blow pipe.

METHODS OF MANUFACTURE.

nitations of precious stones are pressed in molds of the size
required in the finished stone. The facets are then ground
hed on a revolving table first with carborundum and finally
oli powder.

ed paste diamonds are composed of highly refractive glass
ay be covered with a layer of rock crystal to give a hard
surface. Rock crystal or clear quartz is an important
n the imitation-gem industry. It is used in the manufacture
ass, and the unaltered crystal, when cut and polished, is used
ely as a brilliant.

ion pearls have been produced in France for many years.
ass globes are coated on the inside with a solution of silvery
es in ammonia. The beads may be filled with wax or other
after coating to protect them from breakage. A process has
rfected recently for producing imitation pearls of the same
tion throughout. This product rivals the true pearl in luster
uty.

netic gems are produced by dropping fine aluminum oxide
through an oxy-hydrogen flame. The material is liquified in
and falls on a table a little below the zone of intense heat, but
ugh so that the melt solidifies very slowly and assumes the
ne form. The artificial crystal (called a "boule") is cut in
ne manner as the mined stones.

ORGANIZATION.

w of the better grades of imitation pearls are produced in the
States but otherwise domestic production of imitation gems
The stones are imported from Europe and distributed by New
mporters.

GEOGRAPHICAL DISTRIBUTION.

Most of the imitation precious stones used in the United States are imported through the port of New York. The only domestic manufacturers are located in New York City and Providence, R. I.

HISTORY OF THE INDUSTRY.

The use of glass for imitation precious stones was known to the ancient Romans. In recent years the industry has been carried to perfection in France, Switzerland and Bohemia. Domestic manufacturers have never been in a position to compete with the imported product.

DOMESTIC PRODUCTION AND CONSUMPTION.

The domestic production of imitation gems is negligible as compared with the imports. No production figures are available.

EXPORTS.

Exports are confined to stones of foreign origin contained in exports of domestic jewelry.

FOREIGN PRODUCTION.

France, Switzerland, and Bohemia (Czechoslovakia) produce the bulk of the imitation gems. The foreign products are noted for their brilliance and luster, and perfect workmanship.

IMPORTS.

Imports of imitation gems fluctuate between wide limits. During the period 1910 to 1919 (fiscal years) imports varied from $817,000 in 1916, to $1,545,000 in 1911. The general average was well over $1,100,000. The war caused a reduction in the imports due to the disturbed conditions in France and to the elimination of the Bohemian industry.

TARIFF HISTORY.

Imports of imitation gems were dutiable at 10 per cent ad valorem under the tariff acts of 1883, 1890, and 1894. In 1897 the rate was increased to 20 per cent and had been held at that figure in all acts since that time.

COMPETITIVE CONDITIONS.

Domestic jewelry manufacturers using imitation gems in their product, buy all their stones from importers in New York. The raw material cost is a very small part of the value of the finished stone, labor cost being the chief factor. The same care is given to cutting imitation gems as is expended when cutting precious stones and the success of the foreign industry is due in large part to the experienced labor available for mixing the glass and cutting the product.

of imitation gems is low, when compared with the value ıe article, and high duties would be very little tempta- ssional smugglers. The stones are used in jewelry and luxuries in the same class as parts of jewelry (par. 356).

tation precious stones [1]*—Imports by countries (fiscal years).*

m—	1912	1913	1914	1915	1916	1917
	$757,727	$798,507	$798,553	$615,945	$258,783	$151,663
	4,806	5,054	1,700			
					3,910	3,032
	341,707	423,164	294,361	96,234	376,203	666,078
	73,618	73,925	90,422	52,846	26,988	103
	276	16,337	1,343	5,745	2,412	26,404
	590	51	217	1,102	197	
				3,038	5,123	3,275
	77	338	8	55,098	119,529	196,589
			1,513			
	2,072	1,889	4,069	14,741	14,192	34,462
	54	112	600	222	319	2,926
					55	
	118	31	111	42	4,625	56,238
		56				
	1,181,045	1,319,464	1,192,897	845,008	812,336	1,140,770

Imported from—	1918	1918 [2]	1919 [2]	1920 [2]
	$12,576	$41,166	$323,545	
	23,708	23,708	102,283	
	593,793	689,415	910,012	
			63,535	
	33,430	22,078	29,415	
	1,011		27,456	
	6,037	1,165	736	
	140,632	79,170	73,671	
e				
	33,193	19,311	9,350	
	3,512	7,238		
	1,940	1,966	2,513	
	9,569	5,425	30,742	
	135			
			6,645	
	859,536	890,642	1,579,903	$2,174,632

[1] Other precious and semiprecious stones, cut, but not set," prior to 1912.

l other precious stones: Imitations of, composed of glass or paste, not exceed- in dimensions, not engraved, painted, or otherwise ornamented or decorated, unted or set—Imports for consumption—Revenue.

Rate of duty.	Value.	Duty collected.	Ad valorem rate.
			Per cent.
.... 20 per cent	$784,401.81	$156,880.38	20.00
....do	636,684.87	127,336.99	20.00
....do	828,030.93	165,606.18	20.00

Diamonds and other precious and semi-precious stones, and imitation of: Imitation precious stones, including pearls, and parts of, for use in the manufacture of jewelry, doublets, artificial or so-called synthetic or reconstructed pearls, and parts of, rubies, or other precious stones—Imports for consumption—Revenue.

Fiscal year.	Rate of duty.	Value.	Duty collected.	Ad valorem rate.
				Per cent.
1910	20 per cent	$1,469,760.17	$293,952.02	20.00
1911	do	1,545,014.44	309,002.89	20.00
1911[1]	20 per cent-20 per cent	30.00	4.80	16.00
1912	20 per cent	1,184,519.34	236,903.88	20.00
1913	do	1,313,341.15	262,668.23	20.00
1914	do	1,187,442.20	237,488.43	20.00
1915	do	853,773.00	170,754.60	20.00
1916	do	817,642.00	163,528.40	20.00
1917	do	1,128,530.00	225,706.00	20.00
1917[2]	Free	1,458.00		
1918	20 per cent	855,258.00	171,051.60	20.00
1918[3]	do	889,086.00	177,817.20	20.00
1919[3]	do	1,590,182.00	318,036.40	20.00
1920[3]	do	2,174,632.00	434,926.40	20.00
1921[4]	do	781,975.00	156,395.00	20.00

[1] Reciprocity treaty with Cuba.
[2] From Philippine Islands.
[3] Calendar year.
[4] Six months ended June 30, 1921.

Imitation precious stones (dutiable)—Rates of duty.

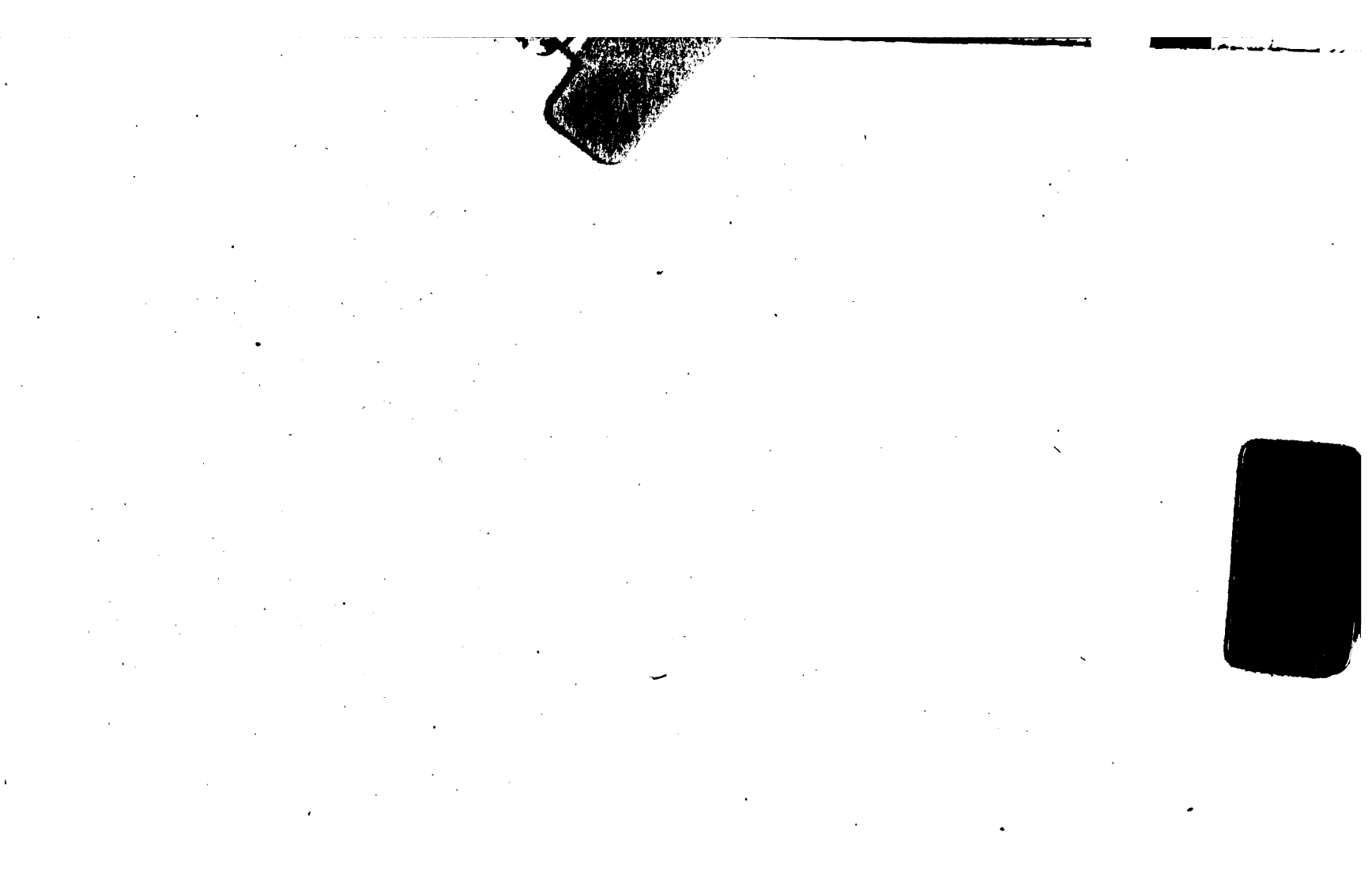
Act of—	Par.	Tariff classification or description.	Rate of duty, specific and ad valorem.
1883	420	Composition of glass or paste, when not set	10 per cent ad valorem.
1890	454	* * * Imitations of precious stones composed of paste or glass not exceeding 1 inch in dimensions, not set.	Do.
1894	338	* * * Imitations of precious stones, not exceeding 1 inch in dimensions, not set.	Do.
1897	435	* * * Imitations of diamonds or other precious stones, composed of glass or paste, not exceeding 1 inch in dimension, not engraved, painted, or otherwise ornamented or decorated, and not mounted or set.	20 per cent ad valorem.
1909	449	* * * Imitation precious stones, including pearls and parts thereof, for use in the manufacture of jewelry, doublets, artificial or so-called synthetic or reconstructed pearls and parts thereof, rubies, or other precious stones.	Do.
1913	357	do	Do.

Court and Treasury Decisions.

The provision in paragraph 357 of the act of 1913 for "imitation precious stones" may well be related to the first provision in the paragraph for precious stones rather than to the clause in which the word "cameo" appears, and it was not intended to relate to anything other than stones which in their natural state are precious stones. The lexicographic meaning of "cameo" does not depend upon whether the substance of which the completed article is composed is a precious stone or is a shell; it is the product of cutting in a certain form wrought upon either shell or precious stone. The process of conversion of a piece of shell into an article like a cameo can not entitle the completed article to be called in any just sense a precious stone simply because cameos may be, and often are, made of precious stones. Earthenware molded in imitation of cameos is not "imitation precious stones" but earthenware ornamented or decorated or manufactured in chief value of such ware. (Wedgwood *v.* United States, 7 Ct. Cust. Appls., 434, of 1917.) Molded glass articles accurately cut to represent brilliants were held dutiable

res of paste under paragraph 95 for large sizes and as
cious stones under this paragraph for small sizes.
, of 1915.) Hatpin tops of glass or paste, although
tation precious stones, are not suitable "for use in the
of jewelry," as, when completed, the hatpins would not
jewelry. (G. A. 7400, T. D. 32883, of 1912.) No limi-
the size of imitation precious stones is prescribed and
xceeding 1 inch in dimensions for jewelry come within
7. (G. A. 7044, T. D. 30722, of 1910.)
urveys on precious stones and jewelry.)

O



UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPH 328 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

JACQUARD DESIGNS, WALL PAPER AND WRAPPING PAPER

Paragraph 328:

Jacquard Designs
Cardboard and Bristol Board (See par. 320.)
Press Boards or Press Paper (See par. 320.)
Wall Paper
Wrapping Paper

REVISED EDITION

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and Index," which contains—

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and Index" the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Constant Southworth, of its staff, and of others.

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JACQUARD DESIGNS.

TARIFF ACT OF OCTOBER 3, 1913.

Par. 328.—Jacquard designs on ruled paper, or cut on Jacquard cards, and parts of such designs, * * * 25 per centum ad valorem.

GENERAL INFORMATION.

DESCRIPTION AND USES.

Jacquard designs or Jacquard cards are used with the Jacquard loom, a machine for fancy weaving, having a chain of perforated cards passing over a rotary prism. The perforations permit the passage of wires that determine the raising of warp threads, causing the figure to be woven in accordance with the prearrangement of the perforated cards.

DOMESTIC PRODUCTION AND IMPORTS.

Jacquard designs used in the United States are almost exclusively domestically produced. They are made by punching holes in pieces of cardboard with a plate (or a piano) punching machine. Imports compared with domestic production are of no importance. They are accounted for in part by the fact that one American company weaving with Jacquard looms has a mill in France which sends for reference to the American mill copies of the designs it produces.

Imports of Jacquard designs and their parts increased from $1,906 worth in the fiscal year 1907 to about $11,000 worth per year in the three fiscal years 1912 to 1914. During the war imports fell rapidly, amounting to only $14 in the fiscal year 1918. In 1920 they increased to $7,059, and in 1921 to $11,293.

TARIFF HISTORY.

Jacquard designs first received separate mention in the tariff law of 1897, when they were made dutiable at 35 per cent ad valorem. The duty remained the same by the act of 1909. The act of 1913 lowered it to 25 per cent. No effect of the different rates on the amount of imports is to be traced.

Statistical Tables.

Jacquard designs on ruled paper, or cut on Jacquard cards, and parts of such designs—Imports for consumption—Revenue, 1907–1921.

	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
Fiscal year:				*Per cent.*
1907	35 per cent	$1,906	$667	35
1908	do	865	302	35
1909	do	85	29	35
1910	do	1,563	547	35
1911	do	7,279	2,547	35
1912	do	11,148	3,901	35
1913	do	11,954	4,183	35
1914	35 per cent	1,082	378	35
	25 per cent	9,681	2,420	25
1915	do	3,533	883	25
1916	do	1,911	477	25
1917	do	459	114	25
1918	do	14	3	25
Calendar year:				
1918	do	877	219	25
1919	do	452	113	25
1920	do	7,059	1,765	25
1921	do	11,293	2,823	25

Rates of duty on Jacquard designs, 1897–1913.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1897	402	* * * all Jacquard designs of one line paper, or parts of such designs, finished or unfinished.	35 per cent ad valorem.
		All Jacquard designs cut on Jacquard cards, or parts of such designs, finished or unfinished.	Do.
1909	415	Jacquard designs on ruled paper, or cut on Jacquard cards, and parts of such designs, * * *.	Do.
1913	328	do	25 per cent ad valorem.

Court and Treasury Decisions.

Jacquard drafts on point paper, and Jacquard cards, the designs having been used as patterns and drafted on the point paper and then by that means transferred to or cut on the cards, were held dutiable under the act of 1897 as though imported separately and not as an entirety. (G. A. 8658, T. D. 29511, of 1909.)

Paper articles consisting of Jacquard designs on ruled paper, and readings from such designs also on ruled paper, necessary for the production of the Jacquard cards for lever lace or Go-through machines, were held to be dutiable under paragraph 415 of the act of 1909. (Abstract 31382, T. D. 33217, of 1913.)

WALL PAPER AND HANGING PAPER.

TARIFF ACT OF OCTOBER 3, 1913.

Par. 328. * * * paper hangings with paper back or composed wholly or in chief value of paper, * * * 25 per centum ad valorem.

Par. 332. * * * all papers * * * not specially provided for in this section, 25 per centum ad valorem.

SUMMARY.

The printing of wall paper (paper hangings) is a separate business in the United States, conducted by firms which buy their unprinted paper (hanging paper) from paper mills. Hanging paper is to a large extent produced by mills whose main output is newsprint paper, the production of hanging paper, which closely resembles newsprint in appearance and material used, being subsidiary to filling large contracts for newsprint. In the calendar year 1920 the production of hanging paper amounted to 113,824 tons and that of wall paper to 99,511 tons. In 1921 only 69,725 tons of hanging paper were produced. The production of hanging paper fluctuates considerably from month to month, according to the time that the machines are allowed to suspend newsprint making in order to operate on hanging paper.

There is no tariff problem in hanging-paper manufacture. Both imports and exports, although not separately stated, are undoubtedly small. At the present time the domestic wall-paper industry meets little foreign competition. Although in 1914 imports amounted to 6 per cent of domestic production, in 1919 the United States imported only 0.43 per cent by value of domestic production, and exported 3.90 per cent. Since that time, however, imports have increased and exports have decreased. In 1919 exports of wall paper amounted to $899,457, while imports were only $99,674. In 1921 exports amounted to $590,549 and imports to $355,760. The last-named figure equaled probably between 1 and 2 per cent of domestic production.

Imports come almost exclusively from Germany, the United Kingdom, and Japan. Before the war Germany held first place in the international wall-paper trade. Her total exports were four or five times those of the United States. In our own markets in 1913 Germany sold wall paper amounting in value to 4 per cent of domestic production. The United Kingdom exported to us much more than she imported from us, but was also a large importer of wall paper from Germany.

Summary table—Wall paper.[1]

	Domestic production.		Imports for consumption.	Domestic exports.	Ratio to production.[2]	
	Quantity.	Value.[3]			Imports.	Exports.
Fiscal year:	*Short tons.*				*Per cent.*	*Per cent.*
1909		[4] $14,449,247	$532,574	$266,735	3.69	1.85
1910			790,711	297,307		
1911			828,675	372,375		
1912			868,294	399,121		
1913			1,052,792	482,836		
1914		[4] 15,887,123	936,339	453,412	5.89	2.85
1915			483,811	251,815		
1916			341,917	365,535		
1917			306,169	504,061		
1918			176,159	462,244		
Calendar year:						
1918	[5] [6] 53,902		135,697	529,539		
1919	[5] 91,305	23,047,901	99,674	899,457	.43	3.90
1920	[5] 99,511		361,363	1,251,743		
1921			355,760	590,549		

	Amount of duty.	Actual or equivalent ad valorem rate.
Fiscal year:		*Per cent.*
1909	$133,143	25
1910	197,677	25
1911	207,168	25
1912	217,073	25
1913	263,198	25
1914	234,084	25
1915	120,952	25
1916	85,479	25
1917	76,542	25
1918	44,039	25
Calendar year:		
1918	33,924	25
1919	24,919	25
1920	90,341	25
1921	88,940	25

[1] Data for hanging paper are insufficient for compilation of summary table.
[2] Based on values.
[3] Census figures.
[4] Calendar year.
[5] Federal Trade Commission figures.
[6] April to December only.

General Information.

DESCRIPTION.

Two varieties of paper are treated in this discussion. The first, wall paper, or paper hangings, is printed or decorated paper used for covering the interior walls of buildings. It is covered by the provision for paper hangings in paragraph 328 of the tariff act of 1913. Hanging paper is the paper used for making wall paper, i. e., it is wall paper not yet printed or decorated. There is no separate provision for it in the tariff law of 1913. Hanging paper is practically the same in appearance and substance as newsprint paper, except that it is heavier. In Canada it is classed as a variety of newsprint.

The principal variety of hanging paper is that designated as No. 2, an uncolored, untreated paper. By far the greater part of the hanging paper output consists of this kind. There are also certain kinds which are specially treated before they leave the paper mill, some of which do not have to be subsequently printed in a

wall-paper mill in order to be used for interior decoration. Among these are oatmeal and tile paper. Oatmeal paper is paper made by adding wood flour to the pulp in the beater just before the pulp is run over the paper machine—a process which makes little white specks visible in the finished paper. The pulp is usually colored in the beater, but the wood flour does not absorb the color in the short time it remains in the beater. Tile paper is specially embossed and colored to resemble tile.

In this discussion the term "hanging paper" will be used throughout to denote the No. 2 grade and also these special varieties, whether or not they are to be subsequently printed in a wall-paper mill. The term "wall paper" will be used to denote the printed or decorated hangings.

DOMESTIC PRODUCTION.

Rank of industry.—The output of hanging paper is less than that of any other grade of paper separately reported by the Federal Trade Commission; in 1920 it was less than one-twentieth of paperboard production and about one-fifteenth of newsprint production. As very little is imported or exported, practically the same paper appears again as finished wall paper, except for the small amounts of special hanging paper which are used unprinted for interior decoration.

Materials.—Hanging paper is made from practically the same materials as newsprint paper, namely, mechanically ground wood pulp, sulphite wood pulp, clay filler, alum sizing, and sometimes some coloring. However, a slightly larger proportion of ground wood is used in making hanging paper. Newsprint uses about 80 per cent ground wood and 20 per cent sulphite, and hanging paper about 85 per cent ground wood and 15 per cent sulphite. A greater proportion of sizing is necessary for hanging paper to insure against its breaking when applied with paste to a wall. Oftentimes about 10 per cent of clay is added to make the paper opaque and give it a suitable surface. Some manufacturers of wall paper, however, object to using hanging paper with a clay filler, because the clay gradually gets into the printing rollers and gums them up.

The question of raw material is the same for the hanging paper and newsprint industries, because hanging paper is often merely an incidental product of a newsprint mill. Either variety can ordinarily be made at will on the same machine. Consequently, as long as a shortage of wood pulp for newsprint exists, it will be felt in the case of hanging paper also, for no manufacturer is likely to devote to making hanging paper wood pulp that manufactured into newsprint would bring a better price—that is, the price of hanging paper must be at least equal to that of newsprint before a manufacturer will make hanging paper. As long as the present large demand for and high prices of newsprint continue, this limitation must be an important one.

The finished wall paper is made out of hanging paper in connection with all kinds of colors and clay coating materials. Obtaining a sufficient supply of hanging paper depends merely on the willingness of a wall-paper manufacturer to pay enough for it to induce the paper mill to make it in preference to newsprint. There is no tariff problem, as hanging paper supplies are practically all domestically produced.

The colors and other coating materials used in treating hanging paper are now largely of domestic production, although they were formerly principally imported. Many wall-paper concerns have their own color manufacturing plants. The colors used are pulp colors, usually made from coal-tar dyes. China clay, both the domestic and that imported from England, is used to some extent, although the domestic is regarded by many manufacturers as inferior to the English grade.

Methods of production.—Hanging paper: The process of manufacturing hanging paper usually does not differ from that of making newsprint,[1] except that, as already stated, slightly different proportions of raw materials are used. Fourdrinier machines are used interchangeably for either grade. The paper, as it comes off the Fourdrinier machine, differs in appearance from newsprint only in that it is heavier and sometimes has been colored in the beater. To a very limited extent Harper Fourdrinier machines[2] and cylinder machines[3] are used in making hanging paper.

Great care must be taken to secure ground wood with fibers comparatively free of each other, resembling sulphite fibers as closely as possible, because the paper to be made is fairly heavy and the machine, operating at a high speed, quickly eliminates the water in the pulp. As noted, considerable sizing is necessary to produce pliability. The paper must not be overdried; otherwise it becomes brittle and is practically worthless.

Oatmeal hanging paper, as stated above, is made by adding wood flour and also usually coloring matter to the pulp in the beater.

The users of hanging paper have adopted a uniform weight system on the unit weight basis of a ream containing 480 sheets of 24 by 36 inch paper. The weights range from 34 pounds per ream of so-called 9-ounce paper to 74 pounds per ream of so-called 18-ounce paper. The ream serves only as a weight basis, the paper being actually sold in pieces 9 yards long and 19⅜ inches wide.

Newsprint paper weighs usually about 32 pounds per ream of 500 sheets, 24 by 36 inches. The lightest hanging paper (9-ounce size) is figured on the newsprint weight basis (500 sheets per ream) would weigh between 35 and 36 pounds. The heaviest (18-ounce size) would weigh 77 pounds. The comparative lightness of newsprint is apparent.

Wall paper: The printing and decorating of wall paper are processes outside the realm of paper manufacture, being the converting of paper as a crude material into a finished commodity. Wall paper printing and newspaper printing are parallel stages in advancing paper to the finished product.

The rolls of hanging paper, usually containing paper 19⅜ inches wide, are received at the wall-paper mill and placed in the storeroom. When needed they are taken to the printing room. This must be a very long room, for the paper printed at one end must be dry when it reaches the other end. The paper is led over a printing or pattern machine. This is a round structure about 12 feet high, superficially resembling a Ferris wheel, although it is stationary on its own axis. Revolving maple rolls are placed at regular intervals around its

[1] See Tariff Information Survey, Printing Paper.
[2] See Tariff Information Survey, Tissue, Bibulous, and Filter Paper.
[3] See Tariff Information Survey, Paper Boards.

surface, their axes in a horizontal position. Each roller has a pattern made usually of brass studs which have been put in it previously by expert pattern makers; also some metal rollers are used. The lower part of each roller revolves in a separate trough containing the liquid coloring material, which has been mixed in a special mixing room out of pulp dyes. The rollers are spaced in such a way that each one prints its part of the finished design in the proper place, so that the aggregate of the designs printed in different colors by the different rollers is the complete design of the finished paper.

Sometimes before the paper is led over the printing machine it is given a preliminary "drowning" process. This consists merely in coating it on one side with English china clay, with a zinc solution or with some other material that gives a uniform background on which to print the design.

After the paper leaves the printing machine it is draped over the rungs of a sort of continuous horizontal ladder conveyor, which is placed near the ceiling, and passes down the length of the room in the form of festoons. A blast of hot air dries it. At the end of the room it is rolled up.

An elaborate sample room is a necessary part of a wall-paper mill, because, unlike other kinds of paper, there can be no standardization of product. Each design must be selected separately, and the samples must be fairly large in order that from them the effect of the designs on the wall may be adequately judged.

Organization.—The wall-paper mills are usually separate from the hanging-paper mills and purchase their crude paper.

There were 26 mills producing hanging paper in July, 1922. In most instances they are fairly large, for as in the case of other kinds of paper, even a small equipment of beaters, Jordan refining engines, and Fourdrinier machines requires considerable floor space and capital investment. Moreover, a number of the concerns producing hanging paper are among the most important newsprint companies, making newsprint as their major product, and operate huge mills, with ground-wood plants and sometimes sulphite plants attached. Special varieties of hanging paper other than the common white variety, such as colored and oatmeal hanging paper and the heaviest grades of white, are usually made separate from newsprint manufacture in mills which do not make newsprint.

In 1914, according to the United States Census, there were 48 wall-paper printing establishments in the United States, capitalized at $17,619,896. In 1919 the number of establishments was the same as in 1914. Most of these concerns are also of necessity large, because the machinery is expensive and covers much floor space. Some wall-paper printing establishments have separate dye manufacturing plants and maintain their own print roller designing force.

Geographical distribution.—Two-thirds of the domestic hanging paper is produced in New York State. Wisconsin and Pennsylvania produce most of the remainder. New York is also the principal wall paper State, but Pennsylvania produces nearly as much. New Jersey and Illinois are important wall-paper producing States. Twenty years ago Ohio was third in importance, but her production of wall paper has greatly declined.

Development of the industry.—In 1849, when the wall-paper industry was just beginning, there were only six establishments in the United

States making wall paper, with an output valued at $107,040. The number increased by more than 300 per cent during the following decade, reaching 26 in 1859, with twenty times the 1849 output. In 1869 there were only 15 establishments, with about the same output as in 1859. This decrease in number of mills with unchanged volume of output reflected the process of combination and increase of output per mill which was going on. The number of establishments increased to 51 in 1899, although the output in that year was only two-thirds of the 1914 output. As already noted, there were 49 wall-paper establishments in 1919.

Domestic production and consumption.—Hanging paper: The census figures indicate that production of hanging paper increased from 54,330 tons in 1899 to 96,527 tons in 1914. However, the Federal Trade Commission figures show a decrease in production after 1914, the 1918 production being only 63,268 tons or about two-thirds of the 1914 production. This increased to 92,136 tons in 1919, according to the Federal Trade Commission, but to only 69,445 tons according to the Bureau of the Census. Production in 1920, according to the Federal Trade Commission, reached 113,824 tons, but declined to 69,725 tons in 1921. Monthly production also has varied considerably in amount, as shown in the table of production by months in 1919, 1920, and 1921, page 12. That production can fluctuate so much without detriment to the industry is due largely to the fact that many of the paper machines can be operated on newsprint at will in preference to hanging paper.

This production supplies practically the whole of domestic consumption, although in abnormal times there may be a temporary shortage due to difficulty of securing raw material in connection with an unusually high demand, such as took place in the first half of 1920. Although separate figures for imports and exports of hanging paper are not available, it is certain that both are almost negligible. Canada, the principal foreign source of newsprint, produces practically no hanging paper.

Wall paper: The production of wall paper increased from $10,964,269 worth in 1899 to $23,047,901 in 1919. As already noted, this was an increase from $107,140 in 1849. No tonnage statistics are available until the year 1918, when the Federal Trade Commission began to compile them. The first whole year for which we have figures is 1919 when 91,305 tons were produced, which was almost exactly the same as the production of hanging paper in that year. In 1920, 99,511 tons were produced. In 1921 the compilation of wall-paper production figures was discontinued. Although it is thus impossible to make direct comparison of present production with pre-war production, it can be assumed that in a general way the output has varied in about the same proportion as the output of hanging paper. This, in the last five years, has fluctuated considerably and except for 1920 has been below the 1914 output.

An appended table of production by months in 1919 and 1920, page 12, shows remarkable fluctuations in output from month to month. Both in 1919 and 1920 production was very low during the summer months. Thus the production in June, 1919, was 2,688 tons, in comparison with 10,891 tons in October of the same year.

Production of wall paper in the United States supplies practically the whole of the demand for domestic consumption. Imports in

1919 were less than one-half of 1 per cent of production, although in 1914 they amounted to nearly 6 per cent. In 1921 they were probably between 1 and 2 per cent of production.

Domestic exports.—The value of exports increased from $297,307 in the fiscal year 1910 to $1,251,743 in the calendar year 1920. There were some fluctuations, but the general tendency was toward an increase. Exports decreased to $590,549 in 1921. The larger figures of recent years are due in considerable part to an increase in price per unit. In 1914 exports amounted to 2.85 per cent of domestic production and in 1919 to 3.90 per cent. The proportion in 1921 was probably somewhat smaller than in 1919.

Ordinarily Canada has received more than half of the exports of wall paper from the United States, and the United Kingdom, Mexico, Argentina, Chile, Colombia, Australia, and New Zealand have received more or less scattering amounts. In 1919 France, Newfoundland and Labrador, and Brazil were also rather important in the export trade in wall paper.

In Germany, before the war, American wall paper was not able to compete on the basis of price with the domestic product. Only American wall paper with special taste and distinctiveness of design could be marketed in Germany. American exports to Germany were very small, although Germany shipped wall paper to the United States in greater quantities than did any other country.

FOREIGN PRODUCTION.

Separate figures for hanging and wall paper production in the three countries of importance as sources of imports of wall paper, namely, Germany, the United Kingdom, and Japan, are not available. There are about 60 wall-paper factories in Germany. The United States and Germany are the two most important producers of wall paper in the world. Their relative position is difficult to determine, but the United States probably leads. Canada in 1919 produced 7,463 short tons of hanging paper, valued at $574,191.

IMPORTS.

Hanging paper.—No separate statistics are available.

Wall paper.—The value of imports for consumption of wall paper increased from $671,904 in the fiscal year 1907 to $1,052,792 in the fiscal year 1913. After 1913 it decreased steadily to $99,674 in the calendar year 1919. In 1920 and 1921, however, it amounted to $361,363 and $355,760, respectively.

In the fiscal year 1914, when imports were practically at their high point, they were slightly less than 6 per cent by value of domestic production. In the calendar year 1919 they amounted to 0.43 per cent of domestic production. In 1920 and 1921 it is probable that the proportion of imports to domestic production was between 1 and 2 per cent.

Germany was formerly our great competitor, both in export markets and in our domestic trade. In 1913 Germany sent the United States wall paper amounting in value to $646,358, or approximately 4 per cent of our total domestic production. After the fiscal year 1914, however, German exports to the United States

declined, and in 1917 ceased entirely. In the calendar year 1919 they began again in a small way, and by 1921 they amounted to nearly one-half of the imports of wall paper. The United Kingdom and Japan rank next in importance as sources of wall paper.

TARIFF HISTORY.

Paper hangings have been dutiable at 25 per cent ad valorem by every tariff act from 1883 to 1913, except that of 1894, by which they were dutiable at 20 per cent.

No effect of the tariff rate on imports is discernible, for the rate has been practically constant, and imports into the United States increased steadily up to the outbreak of war, when hostilities caused their decrease to a small fraction of their pre-war volume.

PRICES.

The following table shows the range of contract and open-market prices, and where available the average prices f. o. b. mill, actually paid by wall-paper consumers for No. 2 white hanging paper, per 100 pounds, during specified months in 1919 and 1920:[1]

Month.	Range.		Average.	
	Contract.	Open market.	Contract.	Open market.
1919:				
January	$6.00 $6.00	$6.20 $6.50		
April	7.00 8.00	8.00 8.50	$8.00	$8.00
July	8.00 8.00	8.00	8.00	8.00
October	8.00 8.50	8.00 8.50	8.00	8.00
1920:				
January	8.00 8.50	8.00 7.00	8.50	8.00
April	8.00 11.50	8.00 11.50	9.00	9.00
July	8.00 12.00	7.00 11.50	9.00	10.00
October	8.50 12.50	11.00 12.50	11.00	10.00
December	8.00 12.00	7.00 12.50	10.00	9.00

Until after July in 1919, the open-market price lagged behind the contract price. From October, 1919, for somewhat more than a year, on a rising short of supplies, the average open-market price paid by wall-paper makers was considerably higher than the contract price. By December, however, the open-market price had fallen below the contract price. Although the range of contract prices increased between October and December, 1920, the average contract price declined slightly. The hanging-paper market has manifested much the same fluctuations as the wall-paper market.

COMPETITIVE CONDITIONS.

Hanging paper. The United States is practically free from foreign competition in hanging paper. Countries like Germany, which before the war had a large export trade in wall paper, preferred to manufacture their hanging paper into wall paper before exporting it.

[1] The compilation of statistics on hanging paper was discontinued in 1921.

Wall paper.—That the industry is not subject to very dangerous foreign competition is demonstrated by the fact that in the calendar year 1919 exports of wall paper amounted to $809,457 as compared with imports of $99,674. Imports into the United States in 1919 amounted only to 0.43 of 1 per cent of production. Even in 1921, when industry in general was suffering from depression, imports amounted probably to only between 1 and 2 per cent of production, while exports amounted to one and one half times imports.

Before the war, as now, Germany, the United Kingdom, and Japan were the only countries that sent wall paper to the United States in significant amounts. In 1914 imports were nearly 6 per cent of domestic production. Of these three countries, Germany was the only serious competitor. In 1913, a representative pre-war year, Germany sent the United States $646,353 worth of wall paper in spite of the 25 per cent tariff. This was about 4 per cent of domestic production in that year. On the other hand, in the same year the United States sent to Germany only $16,725 worth of wall paper. Furthermore, Germany was far ahead of the United States as a general exporter of wall paper. In 1912 and 1913 she exported $2,257,200 and $2,180,300 worth, respectively, of wall paper in comparison with total domestic exports of $399,121 and $482,836 in the same years. The actual amounts of these exports were 13,947 and 13,197 short tons—undoubtedly from 15 to 20 per cent of American production. Germany was the dominant figure in the world's wall-paper market. It was reported just before the war from Germany that overproduction in wall paper prevailed. Prices were much lower than American prices.

Our wall-paper trade with the United Kingdom was not so one-sided. In 1913 and 1914 we imported from her $236,395 and $222,667 worth, respectively, and exported to her $50,164 and $40,971 worth. The United Kingdom herself used to be one of the largest importers of German wall paper.

Japanese exports to the United States were not in such volume as to offer serious competition.

STATISTICAL TABLES.

Production of hanging paper in United States, by States, 1899–1919.

(From Federal Census.)

State.	1899		1904		1909		1914		1919	
	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.
New York	[illegible]	[illegible]	42,725	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
Wisconsin	191	7,261	1,764	73,919	8,995	411,249	14,670	666,999	15,740	1,771,449
Pennsylvania	4,115	192,791	7,514	409,597	9,769	566,965	5,999	327,995	(1)	(1)
All other	10,201	502,662	11,316	552,545	11,442	597,749	7,196	407,512	8,911	607,497
Total	14,507	702,715	63,319	4,035,461	42,106	4,631,514	33,921	4,400,410	33,445	5,044,499

(1) Pennsylvania included in "All other."

Production of hanging paper in United States, by years, 1899–1921.

[From Federal Census.]

Year.	Short tons.	Value.	Year.	Short tons.	Value.
1899	54,220	$2,265,245	1914	96,527	$4,488,910
1904	62,606	3,013,464	1919	69,445	6,043,280
1909	92,158	4,431,514			

[From Federal Trade Commission.]

	Short tons.		Short tons.
1917	86,912	1920	113,824
1918	63,298	1921	69,725
1919	92,136		

Production of hanging paper in United States, by months, 1919, 1920, and 1921.

Month.	1919	1920	1921	Month.	1919	1920	1921
	Short tons.	*Short tons.*	*Short tons.*		*Short tons.*	*Short tons.*	*Short tons.*
January	9,180	9,935	9,507	July	6,642	9,037	4,459
February	8,260	8,654	7,522	August	6,243	9,554	5,476
March	8,774	10,047	5,715	September	7,909	10,124	5,482
April	7,326	8,550	3,802	October	8,569	10,222	7,158
May	6,297	10,776	2,479	November	8,222	9,698	7,505
June	5,761	8,861	3,109	December	8,892	8,266	7,451

Production of wall paper in United States, by States, 1899–1919.

[From Federal Census.]

State.	1899	1904	1909	1914	1919
Illinois	$548,728	$1,093,835	$1,366,763	$2,254,048	$5,707,927
New Jersey	310,094	2,093,950	2,872,424	3,424,061	3,334,261
New York	1,336,561	5,595,693	5,276,870	4,576,726	7,037,982
Ohio	1,155,400	[1]	[1]	450,387	[1]
Pennsylvania	2,260,915	3,022,824	3,695,211	4,152,855	5,588,875
All other	5,352,571	830,278	[2] 1,237,979	1,029,046	1,378,876
Total	10,964,269	12,636,580	14,449,247	15,887,123	23,047,901

[1] Ohio included in "All other."
[2] Includes paper ultimately intended to be used for purposes of interior decoration such as No. 2 hanging, oatmeal, tile paper, etc.

Production of wall paper in United States, by years,[1] 1918–1920.

[From Federal Trade Commission.]

	Short tons.		Short tons.
1918	[2] 53,902	1920	99,511
1919	91,315		

[1] Compilation of figures discontinued in 1921.
[2] April to December only.

Production of wall paper in United States, by months, 1919 and 1920.

Month.	1919	1920	Month.	1919	1920
	Short tons.	*Short tons.*		*Short tons.*	*Short tons.*
January	10,524	10,042	July	3,930	5,380
February	8,529	9,538	August	4,183	5,765
March	8,738	11,386	September	9,261	8,578
April	7,449	8,527	October	10,891	9,419
May	5,148	7,630	November	9,913	8,475
June	2,688	5,561	December	10,051	9,210

Imports of paper hangings, by countries, 1911–1921.

FISCAL YEARS.

Imported from—	1911	1912	1913	1914	1915	1916	1917	1918
Germany	$434,729	$502,035	$646,358	$576,779	$221,876	$10,964	.....	.....
United Kingdom	201,770	195,983	236,395	222,667	183,399	234,494	$197,481	$86,752
Japan	118,577	78,949	104,712	86,112	57,263	68,372	91,643	88,339
All other	50,357	48,195	48,253	48,219	15,441	15,324	13,280	6,881
Total	805,433	825,162	1,035,718	933,777	477,979	329,154	302,404	181,972

CALENDAR YEARS.

Imported from—	1918	1919	1920	1921
Germany	.....	$39,935	$42,333	$159,410
United Kingdom	$62,943	47,744	200,697	59,691
Japan	73,994	6,973	72,077	100,096
All other	6,512	9,674	38,684	44,072
Total	143,449	104,326	353,791	363,269

Hangings, with paper back or composed wholly or in chief value of paper—Imports for consumption—Revenue, 1907–1921.

	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
Fiscal year:				*Per cent.*
1907 [1]	25 per cent	$671,904	$167,976	25
1908	....do	609,361	152,340	25
	25 per cent less 20 per cent [2]	8	1	20
1909	25 per cent	532,574	133,143	25
1910	....do	790,711	197,677	25
1911	....do	828,675	207,168	25
1912	....do	868,294	217,073	25
1913	....do	1,052,792	263,198	25
1914	....do	936,339	234,084	25
1915	....do	483,811	120,952	25
1916	....do	341,917	85,479	25
1917	....do	306,169	76,542	25
1918	....do	176,159	44,039	25
Calendar year:				
1918	....do	135,697	33,924	25
1919	....do	99,674	24,919	25
1920	....do	361,363	90,341	25
1921	....do	355,760	88,940	25

[1] Hangings and paper for screens or fireboards. [2] From Cuba, under reciprocity treaty of 1903.

Domestic exports of paper hangings, 1910–1921.

FISCAL YEARS.

Exported to—	1910	1911	1912	1913	1914	1915	1916	1917	1918
United Kingdom	$26,599	$34,039	$44,647	$50,164	$40,971	$23,971	$35,090	$13,314	$5,116
Canada	184,904	224,450	247,120	317,414	313,397	192,212	254,529	300,716	248,029
Mexico	27,512	32,870	24,016	30,077	11,833	1,305	900	5,653	15,809
Argentina	7,367	3,333	9,940	3,381	1,932	6,097	9,760	18,975	30,101
Chile	1,740	5,437	4,475	4,440	2,374	80	224	25,451	39,693
Colombia	348	1,181	1,251	928	1,675	1,371	12,516	22,797	14,301
Australia	16,121	17,636	15,868	17,905	19,476	6,099	9,190	19,896	22,159
New Zealand	9,839	20,581	12,583	17,168	15,916	5,771	9,736	13,094	8,205
All other countries	22,877	32,848	39,221	41,359	45,838	14,909	33,590	94,165	78,831
Total	297,307	372,375	399,121	482,836	453,412	251,815	365,535	504,061	462,244

Prod[illegible]

[illegible] 1910–1921—Continued.

[illegible] YEARS.

Year.	[illegible]	1919	1920	1921
1899	[illegible]	$69,021	$436	[illegible]
1904	[illegible]	36,709	251,033	[illegible]
1909	[illegible]	407,252	526,412	[illegible]
	[illegible]	49,491	6,420	[illegible]
	[illegible]	21,745	40,606	[illegible]
	[illegible]	53,379	55,965	[illegible]
	[illegible]	12,336	5,006	[illegible]
	[illegible]	39,972	29,549	[illegible]
1917	[illegible]	14,735	32,051	[illegible]
1918	[illegible]	34,438	13,154	[illegible]
1919	[illegible]	58,148	79,208	[illegible]
	[illegible]	110,941	211,906	[illegible]
Productio	[illegible]	900,457	1,251,743	[illegible]

[illegible] *1883–1913.*

Month.	[illegible] Tariff classification or description.	Rate of duty.
January	[illegible]	25 per cent ad valorem.
February	[illegible]	Do.
March	[illegible]	20 per cent ad valorem.
April	[illegible]	25 per cent ad valorem.
May	[illegible]	Do.
June	[illegible] paper hangings with paper back or composed wholly or [illegible] paper	Do.
P[illegible]	[illegible] not specially provided for in this	Do.

Sta[illegible]	[illegible]
Illinois	[illegible]
New Jersey	[illegible]
New York	[illegible]
Ohio	[illegible]
Pennsylvania	[illegible]
All other	[illegible]
Total	[illegible]

[illegible] Ohio include
[illegible] Includes pap
oatmeal, tile pa

[illegible]	[illegible]
1918	[illegible]
1919	[illegible]

[illegible] Com
[illegible] Apr

COURT AND TREASURY DECISIONS.

Papers colored and embossed to imitate leather and papers coated with a [illegible] to imitate velvet were held dutiable under the act of 1883 as paper hangings. (Dejonge v. Magone, 159 U. S. 562.)

Stamped-out paper reliefs in floral designs on separate sheets about 15 inches long and 12 inches wide, and which were used as papers for wall paper, being applied to a background of solid color by paste, were held dutiable as paper hangings under the act of 1897 (Abstract 10808, T. D. 27280), as were an article composed of cotton and gilt paper, the latter chief value, and chiefly if not exclusively used as wall paper (G. A. 5976, T. D. 26185); so-called grass cloth with a paper backing, grass cloth chief value, on the ground of its being "uniformly and generally classed throughout the country as within that class of goods known as paper hangings" (G. A. 6202, T. D. 26850), and hand painted paper hangings (G. A. 6586, T. D. 28157).

White paper in reels or rolls 19¼ to 22 inches wide imported for use as a material for paper hanging was held to come within the provision in paragraph 415 of the act of 1909 against the importer's contention that it was dutiable under paragraph 409 as printing paper suitable for printing books or as paper not specially provided for. Government counsel conceded that the importation was material for paper hangings, properly classable as paper not specially provided for. (Thomas v. United States, 2 Ct. Cust. Appls. 397.) Paper hangings were denominatively provided for in paragraph 415 of that act without restriction as to the manner of their printing and, accordingly, included lithographically printed paper in rolls 18 inches wide in designs forming repeats of from 5 to 30 feet and used as papers or friezes for wall hangings. (G. A. 7434, T. D. 33214.)

WRAPPING PAPER.

TARIFF ACT OF OCTOBER 3, 1913.

Par. 328. * * * wrapping paper not specially provided for in this section, 25 per centum ad valorem.

SUMMARY.

Wrapping paper ranked third in paper production in the United States in 1921, being surpassed only by newsprint paper and paper boards. The principal seats of industry are in Maine, New Hampshire, New York, Pennsylvania, and the Lake States.

The tariff problem is not a pressing one. Imports are in very small volume and amount to less than exports. From the beginning of the war until 1921 the wrapping-paper industry was practically free from foreign competition, although before the war Germany and Scandinavia exported in moderate quantities to the United States. Imports from Europe fell off during the war, and from 1917 to 1920 Canada was the only foreign source of importance, although she sent to the United States less than one-half of 1 per cent of domestic production. In 1921, however, shipments from Sweden and Germany began again, and total imports increased from 0.22 of 1 per cent of domestic production in 1920 to 0.71 of 1 per cent in 1921. Exports, which from 1916 to 1920 averaged more than 30,000 tons per year, decreased in 1921 to 13,022 tons, or 1.66 per cent of domestic production.

Summary table—Wrapping paper.[1]

	Domestic production.[2]	Imports for consumption.	Domestic exports.	Ratio to production.[3]	
				Imports.	Exports.
Fiscal year:	*Short tons.*	*Short tons.*	*Short tons.*	*Per cent.*	*Per cent.*
1913			7,056		
1914	[4] 851,799	[4] 14,055	7,987	[5] 1.64	0.93
1915		16,422	11,515		
1916		7,695	22,422		
1917	[4] 727,515	2,696	21,794	.35	2.75
1918		3,682	20,[illegible]		
Calendar year:					
1918	714,689	3,[illegible]	20,[illegible]	.54	4.25
1919	694,287	2,[illegible]	17,[illegible]	.32	2.[illegible]
1920	821,989	2,27[illegible]	20,[illegible]	.27	2.[illegible]
1921	[illegible],695	[illegible],[illegible]	13,122	.85	1.66

[1] Owing to the substitution in 1915 by the Department of Commerce of the calendar year for the fiscal year as a basis for reporting detailed import and export statistics, the same changes have been made in figures for both the fiscal year and the calendar year being given in 1918.

[2] Production figure for 1914 is from Bureau of Census; later figures are from Federal Trade Commission.

[3] Through the fiscal year 1915 this is the ratio of imports or exports in the fiscal year to production in the calendar year.

[4] Calendar year.

[5] Includes only imports from Oct. 3, 1913, to June 30, 1914.

Domestic exports of paper hangings, 1910–1921—Continued.

CALENDAR YEARS.

Exported to—	1918	1919	1920	1921
France		$49,021	$436	
United Kingdom		58,789	251,038	$97,454
Canada	$276,674	407,252	526,412	316,261
Newfoundland and Labrador	21,804	40,401	6,420	1,851
Mexico	25,003	21,745	40,608	59,061
Argentina	32,943	53,379	55,965	19,610
Brazil	5,568	32,336	5,006	217
Chile	27,405	20,972	29,549	6,965
Colombia	10,835	14,735	32,051	5,577
Australia	35,802	34,438	13,154	10,926
New Zealand	28,945	56,148	79,208	42,620
All other countries	64,560	110,241	211,896	30,007
Total	529,539	899,457	1,251,743	590,549

Rates of duty on paper hangings, 1883–1913.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1883	392	Paper hangings * * *.	25 per cent ad valorem.
1890	422	do.	Do.
1894	310	do.	20 per cent ad valorem.
1897	402	do.	25 per cent ad valorem.
1909	415	* * * paper hangings with paper back or composed wholly or in chief value of paper * * *.	Do.
1913	328	do.	Do.
	332	* * * all papers * * * not specially provided for in this section.	Do.

Court and Treasury Decisions.

Papers colored and embossed to imitate leather and papers coated with a flock to imitate velvet were held dutiable under the act of 1883 as paper hangings. (Dejonge *v.* Magone, 159 U. S. 562.)

Stamped-out paper reliefs in floral designs on separate sheets about 15 inches long and 12 inches wide, and which were used as papers for wall paper, being applied to a background of solid color by paste, were held dutiable as paper hangings under the act of 1897 (Abstract 10808, T. D. 27280), as were an article composed of cotton and gilt paper, the latter chief value, and chiefly if not exclusively used as wall paper (G. A. 5976, T. D. 26185); so-called grass cloth with a paper backing, grass cloth chief value, on the ground of its being "uniformly and generally classed throughout the country as within that class of goods known as paper hangings" (G. A. 6202, T. D. 26850), and hand painted paper hangings (G. A. 6586, T. D. 28157).

White paper in reels or rolls 19½ to 22 inches wide imported for use as a material for paper hanging was held to come within the provision in paragraph 415 of the act of 1909 against the importer's contention that it was dutiable under paragraph 409 as printing paper suitable for printing books or as paper not specially provided for. Government counsel conceded that the importation was material for paper hangings, properly classable as paper not specially provided for. (Thomas *v.* United States, 2 Ct. Cust. Appls. 397.) Paper hangings were denominatively provided for in paragraph 415 of that act without restriction as to the manner of their printing and, accordingly, included lithographically printed paper in rolls 18 inches wide in designs forming repeats of from 5 to 30 feet and used as papers or friezes for wall hangings. (G. A. 7434, T. D. 33214.)

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SUMMARY.

Wrapping paper ranked third in paper production in the United States in 1921, being surpassed only by newsprint paper and paper boards. The principal seats of industry are in Maine, New Hampshire, New York, Pennsylvania, and the Lake States.

The tariff problem is not a pressing one. Imports are in very small volume and amount to less than exports. From the beginning of the war until 1921 the wrapping-paper industry was practically free from foreign competition, although before the war Germany and Scandinavia exported in moderate quantities to the United States. Imports from Europe fell off during the war, and from 1917 to 1920 Canada was the only foreign source of importance, although she sent to the United States less than one-half of 1 per cent of domestic production. In 1921, however, shipments from Sweden and Germany began again, and total imports increased from 0.22 of 1 per cent of domestic production in 1920 to 0.71 of 1 per cent in 1921. Exports, which from 1916 to 1920 averaged more than 30,000 tons per year, decreased in 1921 to 13,022 tons, or 1.66 per cent of domestic production.

Summary table—Wrapping paper.[1]

	Domestic production.[2]	Imports for consumption.	Domestic exports.	Ratio to production.[3]	
				Imports.	Exports.
Fiscal year:	*Short tons.*	*Short tons.*	*Short tons.*	*Per cent.*	*Per cent*
1913	.....	.....	7,058	.....	.....
1914	[4] 881,799	[4] 14,655	7,067	[5] 1.66	0.80
1915	.....	16,432	11,515	.....	.....
1916	.....	7,085	32,422	.....	.....
1917	[4] 727,515	3,406	31,781	.46	3.76
1918	.....	3,092	29,675	.....	.....
Calendar year:					
1918	714,000	3,898	29,950	.54	4.19
1919	694,207	2,327	37,458	.33	5.39
1920	831,889	2,271	30,632	.27	3.68
1921	651,605	5,520	13,022	.85	1.99

[1] Owing to the substitution in 1918 by the Department of Commerce of the calendar year for the fiscal year as a basis for reporting detailed import and export statistics, the same change has been made here, figures for both the fiscal year and the calendar year being given in 1918.

[2] Production figure for 1914 is from Bureau of Census; later figures are from Federal Trade Commission.

[3] Through the fiscal year 1918 this is the ratio of imports or exports in the fiscal year to production in the calendar year.

[4] Calendar year.

[5] Includes only imports from Oct. 3, 1913, to July 30, 1914.

Summary table—Wrapping paper—Continued.

	Imports for consumption, value.	Amount of duty.	Value per unit of quantity (pounds).	Actual or equivalent ad valorem rate (per cent).	
				On total imports for consumption.	On dutiable imports only.
Fiscal year:					
1910	$820,660	$287,230	.....	35.00	35.00
1911	1,013,161	386,106	.....	35.00	35.00
1912	872,257	304,865	.....	34.95	35.00
1913	992,237	275,517	.....	27.77	35.00
1914	1,329,172	253,759	[1] $0.028	19.09	26.37
1915	940,003	235,000	.029	25.00	25.00
1916	424,199	106,050	.030	25.00	25.00
1917	425,506	106,377	.062	25.00	25.00
1918	482,936	120,734	.081	25.00	25.00
Calendar year:					
1918	530,278	132,570	.068	25.00	25.00
1919	393,450	98,363	.085	25.00	25.00
1920	423,395	105,688	.093	25.00	25.00
1921	506,314	126,578	.046	25.00	25.00

[1] Includes only imports from Oct. 3, 1913, to July 30, 1914.

General Information.

DESCRIPTION.

As its name indicates, wrapping paper is used for wrapping and packing purposes of all sorts. This is practically its sole use. There are, however, three principal varieties according to material used: (1) Kraft, a very tough brown paper made wholly or in part of sulphate wood pulp, introduced within the last 15 years; (2) manila, a strong paper of lighter color, formerly made principally of old and waste manila rope and rope ends, hemp, jute, and flax waste, old gunny cloth and old gunny bags, but now made chiefly of sulphite wood pulp, and frequently called bogus manila; and (3) fiber paper, a cheap, more or less brittle and tearable variety made of waste paper, cuttings from paper-board factories, mechanically ground wood pulp, wood-pulp refuse, or almost any fibrous material of inferior quality. Of these three sorts, genuine manila made of old rope, bagging, etc., is the strongest per unit of weight. Next comes kraft paper, and then the best grades of wood pulp or bogus manila. Last, of course, are the fiber papers of common stock. In addition to these varieties, there are a number of cheap wood-pulp papers made of ground wood with varying proportions of chemical pulp.

Bag paper is made of all the different substances above listed. Paper to be made into sacks for flour, cement, charcoal, sugar, nails, etc., is necessarily heavy and tough and often is reinforced by cloth.

There are a great many special kinds of wrapping paper, all of which may be classified under the varieties already named. Mill wrapper is a thick, coarse paper, used to a great degree in paper mills, where it is made to pack the staple products of those mills. It is made often out of paper-mill sweepings. So-called news wrapping paper comes under the head of fiber paper, the raw material being repulped newsprint. Straw wrapping paper, screenings (paper made from pulp screened out as unfit for use in the paper for which it was originally intended), express paper (primarily for wrapping express shipments), fruit wrappers, and silk wrappers are other varieties. Certain kinds of tissue paper are used for wrapping purposes, but are

treated separately in the tariff and bear a higher rate of duty. Grease-proof paper and imitation parchment are also mainly used for wrapping. A special survey treats these grades.

Wrapping paper is an essential in the wholesale shipment of a great many commodities, and of course its use in the retail trade is almost universal. Of recent years cardboard cartons have, however, come into use as substitutes for wrapping paper in the retail trade.

DOMESTIC PRODUCTION.

Size of industry.—The wrapping-paper industry ranks third in paper production in the United States, the output of newsprint paper and that of paper boards each being larger both in tonnage and in value. As in the case of these other varieties, the industry producing wrapping paper is a large and important one. It supplies practically all American users of wrapping paper, imports being very small. The following table shows comparative production of the three principal kinds of paper in 1921:

	Tons.
Paper boards	1,664,931
Newsprint	1,226,189
Wrapping paper	651,605

Materials.—The principal materials used in the manufacture of wrapping paper are chemical wood pulp, ground wood, old rope and hemp, jute, flax, tag, and gunny refuse, straw pulp, waste paper, and old fibrous material of almost any kind whatsoever. Sulphite wood pulp, used in the manufacture of bogus manila, is the raw material consumed in greatest quantity. Considerable sulphate pulp and some soda pulp is used in making kraft paper. Ground wood enters to some degree into the manufacture of the cheaper grades of wrapping paper. The shortage of wood pulp of all kinds threatens to be serious. The subject of our supply of wood pulp and its relation to Canada is discussed in another survey. The availability of material, however, is not affected by the tariff. Wood pulp and pulpwoods come in duty free. Canada and Sweden are the principal sources.

Old rope, waste rope, rope ends, flax, jute, and hemp waste, old gunny cloth, and old gunny bags are imported free as paper stock. Imports supply a considerable portion of the domestic consumption of these materials, which are used in making true manila paper. However, there is no shortage in the supply of these materials. Waste paper and waste fiber of other sorts are available in large quantities here in the United States, very little being imported.

Equipment.—Wrapping-paper machinery used in the United States, like machinery employed in making other kinds of paper, is manufactured almost entirely in this country, and is of excellent quality. The American manufacturer can obtain his machinery at least as advantageously as the manufacturer in any other country.

Methods of production.—The fiber is prepared in the beater just as in the case of newsprint and paper boards. Refuse from jute, flax, and hemp, including old rope and bagging, is subjected to a special chemical treatment in advance, just sufficient to isolate the fibers to a condition in which it is possible to work them up into paper. The bagging and rope are cut in a rag chopper and boiled in revolving boilers with lime or caustic soda for several hours at a pressure of 20 to 30 pounds, the lime being used when it is desired to manufacture

a harsh paper and the caustic soda being employed to make paper of a softer texture.

Waste papers are handled in several ways, being softened and pulped in large tanks, in edge runners (machines for mechanical separation of the fibers without shortening them), in special pulping machines, or else direct in the beater.

In the beater the stronger materials, such as jute or old rope and string, are either used by themselves or are blended with inferior raw material, according to the quality of the paper being made. The hemp and jute fibers are generally beaten separately before the other materials are added. The pulp is mixed with the required amount of loading, while the sizing and coloring operations are carried out in the usual way.

Most wrapping paper is made on the Fourdrinier machine, in exactly the same way as printing paper, described in another survey. Certain light wrappings, however, usually glazed on one side, are made principally on a modification of the Fourdrinier machine, called the single-cylinder or Yankee paper machine. The wet end of the machine, onto which the wet pulp is fed, is the same as that of the Fourdrinier machine. As in the case of the latter the beaten pulp passes from the stuff chest onto a moving wire and through the press rolls. But instead of being dried over a number of cylinders, the paper is led over one single cylinder of very large diameter which is internally heated with steam. The paper is usually pressed against the surface of the cylinder by means of a heavy felt. The side of the paper coming into contact with the cylinder becomes highly polished, the surface in contact with the felt remaining in an unfinished rough condition.

Organization.—The wrapping-paper industry, like every branch of the paper industry, is in the hands of a comparatively small number of large mills. A wrapping-paper mill is of necessity a large affair, requiring permanent installations of expensive machines and a large amount of capital. Wrapping paper making can not be undertaken by anyone not willing to devote years of labor and a great deal of money to the enterprise. It takes ordinarily about two years to erect a mill and get it in operation.

Because wrapping-paper machines can ordinarily be used also for making newsprint (as also oftentimes newsprint machines for making wrapping paper) it sometimes happens when the price of newsprint is unusually high, as in the shortage of 1920, that the conversion is made from wrapping paper to newsprint. This of course decreases the available supply of wrapping paper and increases the available supply of newsprint.

In July, 1922, 147 mills were reported to be manufacturing wrapping paper. According to Lockwood's Directory the concerns owning these mills were divided as follows in the manufacture of the different kinds of wrapping paper:[1]

Wrapping paper (not further specified)	80	Rag wrapping paper	19
Manila paper	64	Sack, flour, cement, charcoal, sugar, and nail bag paper, etc	17
Fiber paper	51	Straw wrapping paper	10
Kraft paper	37	Fruit wrapping paper	9
Bag paper	31	Butcher's manila paper	7
Mill wrappers	27	Packing paper	6
Express paper	20	Silk wrappers	3

[1] This tabulation is based on conditions of manufacture obtaining in 1922.

course, in a great many cases a single concern manufactures
l of the varieties of paper named.
ociations.—A considerable number of the wrapping paper
acturers of the United States are affiliated with the Wrapping
Manufacturers' Service Bureau.
graphical distribution.—Bogus or wood manila is produced
r in Maine, New York, Wisconsin, and New Hampshire. Wis-
n is the principal kraft State. Real manila is manufactured
y in New York, Ohio, and Pennsylvania. Heavy mill wrappers
nade chiefly in Pennsylvania, New York, Wisconsin, and Ohio.
of the straw paper output comes from Ohio and New York.
onsin, Michigan, Pennsylvania, and New York produce the
est amounts of other kinds of wrapping paper.
istory of the industry.—The history of the domestic wrapping
er industry has no particular tariff significance, except perhaps
he growing dependence on other nations for chemical wood pulp.
s dependence arises from the development of bogus manila and
ft production and the increasing domestic shortage of wood pulp.
e tendency is away from the use of jute and hemp wastes and toward
creased use of chemical wood pulp. It is not a tariff problem,
owever, that is engendered in this shift of dependence on raw
aterial, but rather a problem of developing new and reliable sources
f supply. In this connection the proposed reforestation of denuded
reas in the Eastern and Lake States and the tapping of the Western
States and Alaska's pulpwood forests are of much significance for
he future.

Domestic production and consumption.—The total production of wrapping paper in the United States increased from 535,252 short tons, with a value of $24,542,373, in 1899 to 881,799 tons, valued at $49,372,753, in 1914. After 1914 there was no increase until 1920 when production was 831,889 tons. In 1921, a year of abnormal depression, only 651,605 tons were produced. The increase in wrapping paper production in the last 22 years has proceeded at a rate much slower than that of any of the other important kinds of paper. Where newsprint nearly tripled, fine paper more than tripled, book paper nearly quadrupled, and paper boards more than sextupled their output between 1899 and 1920; wrapping paper increased its output by almost one-third. The increasing substitution of cartons for paper in wrapping articles in the retail trade partly accounts for the slow increase in production. The paper board industry has here profited at the expense of the wrapping paper industry.

Appended tables (p. 25) show production by States and by varieties for census years 1899 to 1919. Although in 1914 bogus manila was made in greatest quantity, in 1919 kraft paper led in amount of production. Production of manila paper (from rope, jute, tag, etc.) and of heavy wrapping paper (mill wrappers, etc.) increased between 1914 and 1919. The production of straw wrapping paper, important in 1899, had almost ceased by 1919.

Next to newsprint and book paper, wrapping paper uses the greatest supplies of wood pulp. The greatly increased demand for newsprint paper after the war reacted to diminish the supply of raw material for wrapping paper. During the first three quarters of 1920 high-grade sulphite and sulphate pulp were so difficult to obtain that manufacturers of kraft and the better grades of wood

manila were unable to meet the full demand. This shortage of wood pulp is discussed in the survey on wood pulp. The ultimate remedy for such shortages will have to be reforestation in the East, the development of the pulpwood forests of the Pacific Northwest and Alaska, or increased supplies from Canada.

There is plenty of old rope and bagging for manufacturing genuine manila paper, as well as plenty of waste paper and waste fiber of other kinds for the cheap grades of wrapping paper.

The domestic industry supplies practically the entire American demand, imports amounting to less than 1 per cent of production.

Domestic exports.—Printing paper and wrapping paper have the widest foreign markets of any kinds of paper. From 1916 to 1920, 3 to 4 per cent of the wrapping paper made in the United States was exported. In the fiscal year 1914 only four-fifths of 1 per cent was exported. Exports jumped from 11,515 short tons in the fiscal year 1915 to 32,422 short tons in the fiscal year 1916 and remained at about the same level up to the calendar year 1919, when they increased to 37,458 tons. The year 1920 showed a decrease, with exports of only 30,632 tons. In 1921 there was a decrease to 13,022 tons, or to 1.66 per cent of domestic production.

American wrapping paper is sent all over the world. Since 1915 Cuba has been the largest recipient.

FOREIGN PRODUCTION.

An appended table (p. 26) shows that the world's production of wrapping paper in 1906–7 totaled 1,932,080 short tons. Next to the United States production of 561,800 short tons in that year came Germany's output of 341,290 tons, France's 248,260 tons, the United Kingdom's 197,540 tons, and Austria-Hungary's 102,320 tons. None of these nations, however, is at present in a position to compete with the United States in the domestic market.

Canadian production of wrapping paper increased from 50,360 short tons in 1917 to 61,180 tons in 1918, but decreased to 59,697 tons in 1919. Of the 1919 production, 33,394 tons, or slightly more than half, consisted of kraft; 5,460 tons were heavy mill wrappers; 9,427 tons were bogus or wood manila. Almost negligible amounts of true manila and straw wrapping paper were produced. Canada has possibilities for considerable development in wood-pulp wrapping paper manufacture. It probably costs somewhat less to produce it in Canada than in the United States. The extent of Canada's development in this branch of paper manufacture will be determined largely by the American demand and tariff policy. So far, however, most of Canada's sulphate and sulphite pulp for wrapping-paper manufacture has been sent to the United States to be made into the finished paper.

The following table, compiled from the Papermakers' Directory of All Nations, shows the number of mills in all the different countries of the world producing the principal kinds of wrapping paper. The figures are for the year 1920.

Country.	Mills producing—						
	Wrapping (grade unspecified).	Manila.	Kraft.	Bag.	Express.	Mill wrappers.	Straw.
	2						
	4						
	2			1			
	12	1	1	1			
	10		1				
	13	2	2				
	21	10	6	1		2	1
	3						
	3						
	1						
	1						
vakia	10	1	2	5			
	1						
	9	1	2				
	82	4	1	4			2
	63	13	12	28			
	6		2				
	1						
	105						1
	1						
	1						
	4						
nd		1		1			
	4		8	3			
	8		1	1			
	24		1	1			1
ica	1						
	43	5					1
	16		13	6			
ıd	14						
	1						
	1						
	3						
ingdom	13	34	14	23		27	
tates	101	102	30	24	16	9	21
a	3						
tal	597	173	96	99	16	38	27

m the table above it will be seen that the western European ıs, notably Italy, France, and Germany, possess a large number ills manufacturing wrapping paper of unspecified grade. In , the number of mills on wrapping paper is greater than in the d States. But the average European mill is considerably er than the American. This fact explains America's much r output. In manila production, the United States possesses y two-thirds of the world's mills; of kraft mills, nearly one- of the world's total. In bag paper mills the United States, ed Kingdom, and Germany are about even. The United States all the express paper mills, three-fourths of the mills producing wrappers, and 21 out of the 27 straw wrapping paper mills in world.

ıis table has been prepared on a somewhat different basis from previous table, which shows the number of mills in the United es manufacturing the different kinds of paper. However, it s some idea of the comparative number of mills in different ıtries, except that mills in disturbed countries such as Russia listed as before the war.

IMPORTS.

Import trade in wrapping paper is of small importance. In the fiscal year 1914 imports were 1.66 per cent of production. From then until 1921 they decreased almost continuously. In the fiscal year 1914 they amounted to 18,258 short tons dutiable and to approximately 7,000 tons free.[1] They had decreased to 2,271 tons in the calendar year 1920, which represents 0.22 per cent of production. In the calendar year 1921, however, they increased to 0.71 per cent of production.

Up to 1915 Sweden was the largest exporter of wrapping paper to the United States. In the fiscal year 1914 she sent us 8,389 short tons dutiable, or 46 per cent of our dutiable imports, in addition undoubtedly to a considerable amount admitted free of duty.[2] Canada, which first began to send wrapping paper in the last quarter of the fiscal year 1912, developed her export to the United States so rapidly that in the fiscal year 1914 she ranked second to Sweden. In that year wrapping paper imports from Canada amounted to 5,186 tons dutiable, or 28 per cent of dutiable imports and probably about half that amount of free imports.[2] Norway, Germany, and Spain ranked nearly equal as sources of most of the remainder.

During the war the wrapping paper exports to the United States of the countries other than Canada declined to almost nothing. Canada's exports decreased also; in the calendar year 1919 they were probably not more than a third their volume in the fiscal year 1914. The total wrapping paper imports in the calendar year 1919 were 2,401 short tons, of which Canada sent 2,369, or 99 per cent. In 1920, however, imports from Europe began to revive. In 1921, out of 5,707 tons of wrapping paper imported into the United States, 2,875 tons came from Sweden and 1,410 tons from Germany. Practically none came from Canada.

PRICES.

In an appended table (p. 29) are shown the prices of the principal kinds of wrapping paper from 1910 to April, 1922. Until 1916 prices were exceedingly steady. In the early part of 1916 they mounted rapidly, those of kraft and true manila increasing in the greatest proportion. The rise continued into 1917. During the latter part of 1917 they decreased, but not to their former level. The year 1918 showed another increase. During 1919 they increased again but rather slowly. This increase continued fairly steadily up to September, 1920, for every kind of wrapping paper listed except No. 2 jute manila and imported kraft, the prices on which remained steady from January to September, 1920, at 11 and 15 cents per pound, respectively, and screenings, the price of which decreased in early September after a steady rise during the year. September prices remained practically unchanged through the middle of December. The only prices that decreased from December, 1920, to January, 1921, were those on jute manila and kraft. Prices remained

[1] The latter figure has been computed by dividing the value of free imports for consumption in 1914 by the average value per pound of wrapping paper imported under a 25 per cent duty in the same year.

[2] Imports of free wrapping paper in the fiscal year 1914 were not segregated by countries and were reported only by value. (See table p. 28.)

rkably firm for a period of business depression. Between ary, 1921, and April, 1922, prices on all grades decreased. pt in the case of jute manila, the decrease was very marked.

TARIFF HISTORY.

ıtil the act of 1909 wrapping paper was not separately provided ı the tariff schedule. It bore an ad valorem duty of 25 per cent ne acts of 1883 and 1890, 20 per cent by the act of 1894, and 25 cent by the act of 1897 as paper not specially provided for. By act of 1909 wrapping paper was separately specified; 35 per cent fixed as the rate of duty. The Canadian reciprocity act of y 26, 1911, admitted free from Canada wrapping paper valued at more than 4 cents per pound, provided Canada placed no export ties or restrictions on such paper or the wood or wood pulp from ıich it was made. This privilege was extended by judicial con-ruction to other nations under most-favored-nation agreements. ne 1913 tariff terminated the Canadian agreement and reduced the ɜneral tariff on wrapping paper to 25 per cent ad valorem.

It is questionable whether the general tariff has had any effect ne way or the other on imports of wrapping paper, for these mports have decreased steadily since the 1913 tariff went into effect, although it lowered the duty from 35 to 25 per cent ad valorem. War conditions have tended to obscure the effect of the change in tariff through their depressing effect on exports from Europe to the United States.

A sudden growth of wrapping-paper imports from Canada took place shortly after the removal of the tariff barrier on July 26, 1911. The following table shows by quarters the value of our free imports of wrapping paper for consumption from Canada during the entire free period:

July 26, 1911, to Sept. 30, 1911	.....
Oct. 1, 1911, to Dec. 31, 1911	.....
Jan. 1, 1912, to Mar. 31, 1912	.....
Apr. 1, 1912, to June 30, 1912	$1,214
July 1, 1912, to Sept. 30, 1912	1,632
Oct. 1, 1912, to Dec. 31, 1912	21,609
Jan. 1, 1913, to Mar. 31, 1913	62,902
Apr. 1, 1913, to June 30, 1913	118,903
July 1, 1913, to Oct. 3, 1913	[3] 366,757

In this case, the influence of tariff removal in encouraging imports seems to be definitely established, although the actual shipments from Canada did not begin until eight or nine months after Canadian wrapping paper went on the free list. The law went into effect on July 26, 1911. Up to March 31, 1912, the United States imported no wrapping paper from Canada. In the last quarter of the fiscal year 1912 free wrapping-paper importations from Canada began. These increased at a very rapid rate until the 1913 tariff law, imposing a 25 per cent duty on all wrapping paper, n. s. p. f., went into effect. The figure for the period from July 1 to October 3, 1913—$366,757—also includes imports of free wrapping paper from other countries during the period July 28 to October 3, 1913; there is no doubt, however, that imports from Canada in that quarter increased over the previous

[3] Includes also imports of free wrapping paper from other countries between July 28, 1913, and Oct. 3, 1913.

quarter. After the imposition of a general 25 per cent duty, imports from Canada steadily declined.

Thus the importation of a commodity not previously imported from the region in question was apparently effected through placing that commodity on the free list, and the reimposition of the duty, if not a cause of, was coincident at least with a decrease in the newly established volume of import.

COMPETITIVE CONDITIONS.

At the present time the wrapping-paper industry of this country has little foreign competition in its domestic markets. In 1921 imports of wrapping paper amounted to 0.71 of 1 per cent of domestic production. Nevertheless, in 1921 Sweden and Germany again began to export small amounts of wrapping paper to the United States, although from 1918 to 1920, inclusive, imports from Europe were negligible. In 1919 and 1920 Canada was the only country that sent wrapping paper to this country in quantities worth noting, and these amounted to less than one-third of 1 per cent of domestic production. Our 1919 exports to Canada of 4,990 tons over a 32½ per cent tariff in comparison with our imports from her of 2,369 tons indicate our present strong position in relation to Canada, in spite of the fact that Canada can probably produce wood-pulp papers somewhat more cheaply than the United States.

Before the war Germany and Scandinavia had to be reckoned with as competitors in wrapping paper, although the amounts they sent to the United States were small in comparison with domestic production. According to manufacturers the shipments from those countries, especially those from Germany, affected the domestic market much more widely than would be expected from the actual increase of the supply on the market by reason of the amounts sent, because the laws of this country made it impossible for domestic producers to combine to purchase the foreign offerings and bring them on the market in an orderly fashion. Hence these offerings were played off against one American manufacturer after another and unduly depressed the market.

Other facts support the belief that the American wrapping-paper manufacturing industry need not fear competition. The wide export field maintained by the United States supports this belief. American wrapping paper is sent all over the world, and not exclusively to countries with no paper industries of their own. For instance, in the fiscal years 1916 and 1917 we sent 8,000 and 7,000 tons of wrapping paper, respectively, to the United Kingdom. In the calendar year 1919 we sent her nearly 2,500 tons, and in 1920, 2,000 tons. No particular danger from Canadian competition in wrapping paper is apprehended by American manufacturers. This is probably due to the fact that there is no such cleavage of interest between American and Canadian paper manufacturers as exists between American and European manufacturers. A considerable part of the capital invested in the Canadian paper industry is American. Moreover, there seems to be a more or less well-defined division of function, particularly in the better grades of wood-pulp wrapping paper. Canada makes the pulp for the wrapping paper, especially sulphate pulp, and sends it to the United States to be made into the finished product. Hence no clash of American and Canadian interest seems likely.

STATISTICAL TABLES.

Production of wrapping paper in United States, by States, 1899–1919.

[From Federal Census.]

MANILA (ROPE, JUTE, TAG, ETC.).

e.	1899		1904		1909		1914		1919	
	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.
rk	22,760	$1,419,659	20,888	$980,273	17,347	$1,045,375	16,327	$1,250,725	18,181	$3,485,162
	18,579	1,368,700	10,056	777,055	12,393	1,264,635	8,800	816,247	(1)	(1)
lvania	6,930	585,224	5,964	582,976	5,702	670,071	4,089	584,586	(1)	(1)
husetts	6,697	546,388	7,517	942,813	11,025	1,543,083	(1)	(1)	(1)	(1)
ersey	7,377	711,312	7,279	704,765	13,663	1,381,123	(1)	(1)	(1)	(1)
ıer	27,076	1,298,481	35,122	2,148,198	13,601	1,085,149	48,662	4,418,696	101,187	12,956,229
Total	89,419	5,929,764	86,826	6,136,080	73,731	6,989,436	77,878	7,070,254	119,368	16,441,391

HEAVY (MILL WRAPPERS, ETC.).

nsylvania	5,921	$265,034	31,043	$1,366,455	36,619	$1,777,450	18,369	$827,059	31,167	$3,157,708
/ York	38,556	2,164,495	12,741	466,846	18,951	695,468	19,654	662,840	31,007	2,272,796
sconsin	6,493	301,607	9,429	427,105	(1)	(1)	11,424	442,364	23,952	2,324,571
o	5,646	175,473	6,314	164,873	5,725	147,869	5,179	158,715	(1)	(1)
other	26,259	1,235,638	37,465	1,610,309	47,266	1,760,007	44,154	1,497,379	49,357	3,560,126
Total	82,875	4,143,240	96,992	4,035,588	108,561	4,380,794	98,780	3,588,357	135,501	11,315,201

STRAW.

hio	10,619	$211,234	9,078	$207,610	8,682	$217,050	6,395	$172,156	.....	.....
New York	14,650	543,084	4,369	155,970	3,374	116,922	2,948	94,192	.....	.....
All other	66,525	1,273,200	40,785	1,025,768	20,932	536,447	6,263	252,961	.....	.....
Total	91,794	2,027,518	54,232	1,389,348	32,988	870,419	15,606	519,309	5,895	$457,606

BOGUS OR WOOD MANILA.

Maine	31,849	$1,608,605	66,631	$2,935,969	132,233	$7,596,427	124,483	$6,656,440	(1)	(1)
New York	74,724	3,092,370	75,262	3,359,980	79,952	4,206,208	87,277	4,313,583	36,757	$3,248,479
Wisconsin	17,981	690,929	16,838	705,820	51,641	2,588,031	43,688	2,033,790	(1)	(1)
New Hampshire	13,963	629,401	26,647	1,166,898	45,627	2,429,835	(1)	(1)	(1)	(1)
Pennsylvania	11,457	557,003	1,571	72,898	6,167	278,993	8,651	339,190	(1)	(1)
Vermont	13,700	761,832	8,517	445,289	12,635	700,578	5,809	315,924	(1)	(1)
All other	40,152	1,808,537	32,905	1,412,918	39,677	1,977,635	84,079	4,316,709	81,832	7,850,642
Total	203,826	9,148,677	228,371	10,099,772	367,932	19,777,707	353,987	17,975,636	118,589	11,099,121

KRAFT PAPER.[2]

Wisconsin	.....	.....	.....	.....	.....	.....	15,808	$994,977	36,897	$5,249,615
Pennsylvania	.....	.....	.....	.....	.....	.....	(1)	(1)	23,351	3,121,783
New York	.....	.....	.....	.....	.....	.....	(1)	(1)	23,604	3,055,354
Vermont	.....	.....	.....	.....	.....	.....	(1)	(1)	6,578	830,375
All other	.....	.....	.....	.....	.....	.....	93,945	5,954,267	102,153	14,318,067
Total	.....	.....	.....	.....	.....	.....	109,753	6,949,244	192,583	26,575,194

ALL OTHER WRAPPING PAPER.

Wisconsin	13,956	$746,048	53,886	$2,448,470	41,471	$2,346,068	60,320	$3,562,039	58,924	$7,655,119
Michigan	3,586	117,360	18,326	881,655	38,224	2,254,318	44,677	2,678,606	36,876	4,995,975
Pennsylvania	9,997	563,115	18,514	1,098,897	15,507	1,228,064	29,299	1,576,572	8,827	1,196,161
New York	6,695	246,577	43,926	2,217,924	30,474	1,660,271	23,605	1,377,383	20,904	2,726,519
Ohio	7,400	223,754	12,489	428,484	13,218	668,678	5,040	322,895	(1)	(1)
All other	25,704	1,396,500	30,729	1,699,374	40,961	2,044,636	62,854	3,752,469	133,911	20,147,749
Total	67,338	3,293,174	177,870	8,774,804	179,855	10,202,035	225,795	13,269,964	259,442	36,721,744

[1] Included in "All other States." [2] Included in "All other wrapping paper" prior to 1914

Production of wrapping paper in United States, by years.

[From Federal Census.]

Year.	Short tons.	Value.	Year.	Short tons.	Value
1899	535,252	$24,542,373	1914	881,799	$49,372,753
1904	644,291	30,435,592	1919	831,372	103,069,297
1909	763,067	42,220,391			

[From Federal Trade Commission.]

	Short tons.		Short tons.
1917	727,515	1920	831,889
1918	714,000	1921	651,605
1919	694,207		

Production of wrapping paper in United States, by months, 1919, 1920, and 1921.

Month.	1919	1920	1921	Month.	1919	1920	1921
	Short tons.	*Short tons.*	*Short tons.*		*Short tons.*	*Short tons.*	*Short tons.*
January	62,181	91,072	50,916	July	79,703	92,542	51,751
February	55,872	79,351	53,955	August	83,643	95,069	66,666
March	59,071	87,157	58,564	September	82,468	89,767	72,858
April	57,593	95,092	59,667	October	85,183	90,105	83,981
May	68,410	90,062	60,407	November	80,441	79,072	85,066
June	75,157	93,249	56,587	December	79,909	61,274	82,050

World production of wrapping and straw paper, 1906–7.

[From Commercial Report No. 13 of Austrian Commercial Museum, 1909, by F. Krawany.]

	Short tons.		Short tons.
United States	561,800	Italy	89,530
Canada	39,100	Portugal	4,750
Mexico	18,200	Norway	22,800
Austria-Hungary	102,320	Roumania	1,970
Germany	341,290	Russia	64,090
United Kingdom	197,540	Finland	14,790
Belgium	8,200	Sweden	46,600
Bulgaria	390	Switzerland	6,700
Denmark	3,200	Spain	17,700
France	248,260	All other countries	105,400
Greece	800		
Holland	36,650	Total	1,932,080

Production of wrapping paper in Canada, 1917–1919.

[From bulletins of Dominion Bureau of Statistics of Canada.]

Grade.	1917		1918		1919	
	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.
Manila (rope, jute, tag, etc.)	1,394	$292,120	.....	.....	2,389	$396,915
Heavy wrapping (mill wrapper)	11,869	843,919	.....	.....	5,460	338,788
Straw wrapping	646	57,999	.....	.....	449	40,410
Bogus or wood manila	6,265	555,360	.....	.....	9,427	963,320
Kraft paper	26,646	3,250,190	.....	.....	33,394	4,936,793
All other countries	3,540	647,162	.....	.....	8,578	1,303,192
Total	50,360	5,646,750	61,180	$7,341,012	59,697	7,979,418

Imports of wrapping paper, by countries, 1912–1921.

FISCAL YEARS.

Imported from—	1912[1]	1913[2]	1914[3]	
			Short tons.	Value.
Germany	$47,337	$30,369	1,345	$20,801
Norway	150,737	122,446	1,849	99,926
Spain	64,299	64,459	1,227	57,265
Sweden	574,379	502,296	8,389	442,331
Canada	46	1,657	5,186	317,804
All other countries	16,252	20,242	262	20,373
Total	853,050	741,469	18,258	1,028,500

Imported from—	1915		1916		1917		1918	
	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.
Germany	399	$25,286	15	$1,423				
Norway	1,629	85,104	313	17,976	518	$59,925	21	$2,842
Spain	534	25,719	368	20,076	613	59,502	367	39,504
Sweden	7,891	420,469	2,906	159,022	709	59,108	23	2,656
Canada	4,458	277,414	3,117	193,676	1,590	238,334	2,645	325,294
All other countries	450	33,114	317	28,515	88	15,745	19	5,296
Total	15,361	867,106	7,036	420,688	3,518	432,614	3,075	$75,592

CALENDAR YEARS.

Imported from—	1918		1919		1920		1921	
	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.
Spain	77	$8,080	18	$2,080	281	$43,335	130	$15,741
Sweden			3	683	491	113,784	2,875	257,932
Canada	3,873	527,494	2,369	398,460	1,186	207,579	3	269
Austria					56	8,560	816	70,594
Germany					141	25,084	1,410	119,086
All other countries	21	6,292	11	5,347	316	61,947	473	65,227
Total	3,971	541,866	2,401	406,570	2,471	460,289	5,707	528,849

[1] Does not include approximately $1,200 worth of free wrapping paper imported from Canada.
[2] Does not include approximately $200,000 worth of free wrapping paper imported from Canada.
[3] Does not include approximately $370,000 worth of free wrapping paper imported from Canada and other countries between July 1, 1913, and Oct. 3, 1913.

Wrapping paper, n. s. p. f.—Imports for consumption—Revenue, 1910–1921.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual or computed ad valorem rate.
Fiscal year:		*Pounds.*				*Per cent.*
1910	35 per cent		$820,644	$287,225		35
	35 per cent less 20 per cent.[1]		16	4		28
1911	35 per cent		1,103,152	386,103		35
	35 per cent less 20 per cent.[1]		9	3		28
1912	35 per cent		871,043	304,865		35
	Free[2]		1,214			
1913	35 per cent		787,190	275,517		35
	Free[2]		205,046			
	35 per cent[3]		131,553	46,044		35
1914	25 per cent[4]	29,310,768	830,862	207,715	$0.028	25
	Free[5]		366,757			
1915	25 per cent	32,862,541	939,987	234,997	.029	25
	25 per cent less 20 per cent.[1]	496	16	3	.032	20
1916	25 per cent	14,170,776	424,199	106,050	.030	25
1917	do	6,811,394	425,506	106,376	.062	25
1918	do	6,184,715	377,418	94,354	.061	25
1919	do	5,977,046	482,936	120,734	.081	25
Calendar year:						
1918	do	7,795,466	530,278	132,570	.068	25
1919	do	4,653,484	393,450	98,363	.085	25
1290	25 per cent less 20 per cent.[1]	24,528	3,225	645	.131	20
	25 per cent	4,517,628	420,170	105,043	.093	25
1921	do	11,039,769	506,314	126,579	.046	25

[1] From Cuba, reciprocity treaty.
[2] From Canada, act of July 26, 1911.
[3] Act of 1909.
[4] Act of 1913.
[5] From Canada, July 1 to Oct. 3, 1913, and certain other countries, July 28 to Oct. 3, 1913.

Domestic exports of wrapping paper, 1913–1921.

FISCAL YEARS.

Exported to—	1913		1914		1915	
	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.
United Kingdom	639	$98,769	299	$53,170	2,371	$298,196
Canada	3,943	285,602	4,319	289,857	4,580	283,253
Panama	253	17,369	300	19,131	313	21,625
Mexico	240	18,342	141	11,954	621	45,851
Cuba	646	41,386	735	44,391	1,392	90,385
Argentina	11	998	13	1,321	23	2,366
Brazil	46	5,300	24	2,582	44	3,701
Chile	10	802	14	1,071	10	890
Ecuador	1	72	20	1,653	191	18,228
Peru	12	1,450	6	639	36	3,377
China	4	281	2	179	17	1,859
Japan	127	11,689	50	5,417	41	3,162
Australia	106	9,513	108	6,473	419	53,323
Philippine Islands	221	17,585	445	30,839	206	15,170
British South Africa	6	657	4	390	24	2,656
All other countries	793	68,896	587	63,590	1,227	116,756
Total	7,058	578,711	7,067	532,657	11,515	960,798

Domestic exports of wrapping paper, 1913–1921—Continued.

FISCAL YEARS—Continued.

Exported to—	1916		1917		1918	
	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.
ted Kingdom	8,005	$925,262	7,013	$692,612	1,534	$348,749
ada	6,106	487,355	5,457	742,345	4,399	694,480
ama	565	46,958	547	85,983	397	56,798
xico	819	64,880	1,583	207,900	1,170	166,293
ba	9,719	624,361	7,654	645,672	9,533	1,014,648
gentina	212	29,532	370	73,024	392	104,327
azil	183	21,200	571	98,697	323	55,279
hile	246	27,199	289	49,543	523	79,664
cuador	159	15,622	548	89,295	172	29,599
eru	254	26,214	246	41,039	852	149,338
hina	175	19,793	315	48,936	152	33,552
apan	1,110	115,945	520	108,481	3,045	575,143
ustralia	1,161	145,691	1,484	238,277	1,828	362,479
hilippine Islands	543	36,591	513	62,974	785	101,318
ritish South Africa	503	58,594	404	59,007	491	77,434
All other countries	2,662	271,388	4,824	577,453	4,078	634,186
Total	32,422	2,916,585	31,781	3,821,238	29,675	4,483,287

CALENDAR YEARS.

Exported to—	1918		1919		1920		1921	
	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.	Short tons.	Value.
United Kingdom	605	$163,216	2,365	$731,199	2,093	$826,830	542	$173,541
Canada	4,442	769,850	4,990	973,207	5,211	1,366,683	2,419	399,286
Panama	305	43,674	177	30,917	249	48,854	252	48,172
Mexico	834	116,766	2,554	361,426	906	188,800	1,457	274,105
Cuba	8,016	865,621	11,509	1,193,325	10,801	1,813,517	5,640	745,704
Argentina	465	130,223	1,032	315,524	497	169,363	68	21,991
Brazil	276	53,172	641	134,761	374	118,568	26	6,883
Chile	462	76,698	367	75,883	88	23,463	21	6,122
Ecuador	66	11,142	145	27,694	345	76,003	8	2,064
Peru	519	93,623	547	97,920	448	105,970	64	15,184
China	403	79,247	920	176,992	529	188,722	60	22,541
Japan	4,548	878,064	4,245	948,621	3,403	724,253	166	49,367
Australia	2,522	499,484	2,234	496,444	438	145,842	104	34,268
Philippine Islands	812	109,273	583	87,963	709	154,423	425	101,777
British South Africa	678	125,207	676	161,144	181	41,080	17	4,461
All other countries	4,997	813,596	4,473	851,442	4,300	1,001,910	1,753	388,406
Total	29,950	4,828,856	37,458	6,664,462	30,632	6,994,381	13,022	2,293,892

Price per pound (wholesale) of wrapping paper—Minimum price f. o. b. mill New York market on available date nearest 15th of month, 1910–1921.

[Data from Paper Trade Journal.]

Kind or grade.	1910				1911			
	January.	April.	July.	October.	January.	April.	July.	October.
Manila:	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
No. 1 jute	5.00	4.75	4.75	4.75	4.75	4.75	4.75	4.75
No. 2 jute	4.50	4.25	4.25	4.37½	4.37½	4.37½	4.37½	4.37½
No. 1 wood	2.75	2.60	2.55	2.65	2.65	2.65	2.50	2.50
No. 2 wood	2.50	2.30	2.30	2.30	2.30	2.30	2.30	2.30
Butchers'	2.10	2.10	2.10	2.10	2.10	2.10	2.00	2.10
Kraft:								
No. 1 domestic	(1)	(1)	4.37½	4.37½	4.50	4.50	3.75	4.00
No. 2 domestic	(1)	(1)	3.85	3.85	3.85	3.85	4.00	3.75
Imported	(1)	(1)	4.25	4.25	4.25	4.25	4.50	4.50
Fiber:								
No. 1	2.65	2.35	2.35	2.35	2.25	2.25	2.35	2.75
No. 2	(1)	(1)	(1)	(1)	(1)	(1)	2.10	2.25
Screenings	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)

[1] Figures not available

Price per pound (wholesale) of wrapping paper—Minimum price f. o. b. mill New York market on available date nearest 15th of month, 1910–1921—Continued.

Kind or grade.	1912				1913			
	January.	April.	July.	October.	January.	April.	July.	October.
Manila:								
No. 1 jute	4.75	4.75	4.75	4.75	4.75	4.75	4.50	5.00
No. 2 jute	4.37½	4.37½	4.25	4.25	4.25	4.25	4.25	4.75
No. 1 wood	2.60	2.60	2.50	2.50	2.65	2.65	2.60	2.60
No. 2 wood	2.35	2.35	2.35	2.35	2.40	2.40	2.40	2.40
Butchers'	2.10	2.10	2.25	2.25	(1)	(1)	2.20	2.20
Kraft:								
No. 1 domestic	3.75	3.75	3.75	3.85	3.75	3.75	3.65	3.65
No. 2 domestic	3.50	3.50	3.37½	3.25	3.25	3.25	3.25	3.25
Imported	4.12½	4.12½	4.12½	4.15	4.15	4.15	3.87½	3.87½
Fiber:								
No. 1	2.65	2.65	2.65	2.65	2.65	2.65	2.65	2.65
No. 2	2.25	2.25	2.15	2.15	2.25	2.25	2.15	2.15
Screenings	(1)	(1)	(1)	(1)	(1)	(1)	1.75	1.75

Kind or grade.	1914				1915			
	January.	April.	July.	October.	January.	April.	July.	October.
Manila:								
No. 1 jute	5.00	5.00	5.00	5.50	5.50	5.00	5.00	5.00
No. 2 jute	4.75	4.75	4.75	5.25	5.25	4.75	4.75	4.75
No. 1 wood	2.60	2.60	2.55	2.75	2.75	2.75	2.75	2.75
No. 2 wood	2.40	2.40	2.25	2.30	2.30	2.30	2.30	2.30
Butchers'	2.20	2.10	2.10	2.10	2.10	2.10	2.10	2.10
Kraft:								
No. 1 domestic	3.65	3.50	3.30	3.75	3.65	3.60	3.60	3.60
No. 2 domestic	3.25	3.25	3.00	3.35	3.35	3.35	3.35	3.35
Imported	3.87½	3.87½	3.87½	3.87½	3.95	3.95	3.95	3.95
Fiber:								
No. 1	2.65	2.65	2.65	2.90	2.90	2.55	2.55	2.55
No. 2	2.15	2.15	2.10	2.35	2.35	2.25	2.25	2.25
Screenings	1.75	1.85	1.80	2.00	2.00	2.00	2.00	2.00

Kind or grade.	1916				1917			
	January.	April.	July.	October.	January.	April.	July.	October.
Manila:								
No. 1 jute	5.50	10.00	10.00	10.00	10.50	10.00	9.00	10.00
No. 2 jute	4.75	(2)	(2)	(2)	9.50	9.50	8.75	9.25
No. 1 wood	3.25	4.50	5.25	6.00	7.75	7.75	7.00	5.25
No. 2 wood	2.85	4.00	4.25	4.75	7.00	7.00	5.75	5.00
Butchers'	2.30	3.00	3.00	3.75	6.75	6.75	5.50	5.50
Kraft:								
No. 1 domestic	3.75	8.00	8.50	8.75	9.25	9.00	8.00	7.50
No 2 domestic	3.45	5.50	7.00	7.50	8.75	8.75	7.50	6.50
Imported	3.95	7.50	9.00	10.00	(2)	(2)	(2)	(2)
Fiber:								
No 1	3.00	4.50	5.25	5.75	8.00	8.00	7.50	6.25
No. 2	2.75	4.25	4.75	4.75	7.50	7.50	7.50	5.00
Screenings	2.00	3.25	3.50	4.00	5.60	5.60	4.75	4.00

[1] Figures not available. [2] Nominal.

per pound (wholesale) of wrapping paper—Minimum price f. o. b. mill New York market on available date nearest 15th of month, 1910–1921—Continued.

ind or grade.	1918				1919			
	January.	April.	July.	October.	January.	April.	July.	October.
a:	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
o. 1 jute	9.00	(2)	(2)	(2)	13.00	12.00	11.50	11.50
o. 2 jute	8.75	(2)	(2)	(2)	12.50	11.00	11.00	11.00
o. 1 wood	4.45	6.00	6.00	6.50	6.50	5.75	5.75	5.75
o. 2 wood	4.50	5.50	5.50	5.50	6.00	5.00	5.00	5.50
utchers'	4.75	5.00	5.00	5.00	5.00	5.00	5.00	5.00
:								
o. 1 domestic	6.00	(2)	10.00	10.50	10.00	7.50	7.50	9.00
o. 2 domestic	5.00	(2)	8.85	9.00	8.00	6.50	7.00	7.75
mported	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
r:								
o. 1	5.25	6.25	6.50	6.50	6.50	6.75	6.00	6.00
o. 2	4.25	5.50	5.50	5.50	5.50	5.25	4.75	4.75
enings	3.00	3.50	4.50	4.50	4.00	3.75	3.50	3.75

Kind or grade.	1920				1921				1922	
	January.	April.	July.	October.	January.	April.	July.	October.	January.	April.
nila:										
No. 1 jute	12.00	13.50	14.00	16.00	9.00	8.00	8.00	8.00	8.50	8.50
No. 2 jute	11.00	11.00	11.00	11.00	8.75	8.25	8.00	7.75	7.75	7.75
No. 1 wood	7.00	9.00	10.00	10.00	10.00	6.00	5.50	5.00	5.00	4.50
No. 2 wood	6.75	8.00	9.00	9.00	9.00	5.25	5.00	4.50	4.25	4.00
Butchers'	5.00	5.00	6.00	8.00	8.00	7.00	4.90	4.90	4.50	4.25
aft:										
No. 1 domestic	9.50	10.50	12.00	12.00	9.00	6.50	6.00	6.00	6.75	7.00
No. 2 domestic	8.50	10.00	10.50	11.50	(2)	6.50	5.50	5.00	5.75	5.75
Imported	(2)	15.00	15.00	14.00	12.00	6.50	6.00	6.00	6.00	5.75
ber:										
No. 1	6.75	7.50	8.00	8.00	8.00	8.00	6.00	6.00	6.00	6.00
No. 2	6.00	6.00	7.00	7.00	7.00	7.00	5.00	5.00	5.25	5.25
reenings	4.50	5.00	8.00	7.00	7.00	4.25	3.75	2.00	2.50	2.50

Nominal.

Rates of duty on wrapping paper, 1883–1913.

t of—	Par.	Tariff classification or description.	Rate of duty.
3	392	* * * paper not specially enumerated or provided for in this act.	25 per cent ad valorem.
0	422	* * * paper not specially provided for in this act	Do.
4	310	....do	20 per cent ad valorem.
7	402	....do	25 per cent ad valorem.
0	415	* * * wrapping paper not specially provided for in this section.	35 per cent ad valorem.
1	Sec. 2	* * * news print paper, and other paper, * * * manufactured from mechanical wood pulp or from chemical wood pulp, or of which such pulp is the component material of chief value, colored in the pulp, or not colored, and valued at not more than four cents per pound, not including printed or decorated wall paper, being the products of Canada, when imported therefrom directly into the United States, shall be admitted free of duty, on the condition precedent that no export duty, export license fee, or other export charge of any kind whatsoever (whether in the form of additional charge or license fee or otherwise), or any prohibition or restriction in any way of the exportation (whether by law, order, regulation, contractual relation, or otherwise, directly or indirectly), shall have been imposed upon such paper, * * * or the wood used in the manufacture of such paper, * * * or the wood pulp used in the manufacture of such paper.	Free.
3	328	* * * wrapping paper not specially provided for in this section.	25 per cent ad valorem.

COURT AND TREASURY DECISIONS.

To constitute a material paper, it is not necessary that the machine used in its manufacture should be known as a paper-making machine, nor that the material shall contain glue, alum, and clay; the product determines its classification. Material having the ordinary thickness of wrapping paper, with the appearance of wrapping paper and used as such, was held not to be wood pulp but wrapping paper and dutiable under paragraph 402 of the act of 1897 as paper not specially provided for. (Germania Importing Company *v.* United States, 2 Ct. Cust. Appls., 55.) Cloth-lined waterproof wrapping paper, consisting of paper with a coating of pitch, and having attached thereto a cotton fabric to give strength and security to the article, was classified by the Treasury Department as a manufacture of paper under paragraph 407 of the act of 1897 (Dept. order, T. D. 28364); oiled and cotton-lined paper declared to be waterproof used for lining packing cases, wrapping automobile tires, etc., was classified as wrapping paper under the act of 1909 (Abstract 25520, T. D. 31568).

To bring a wrapping paper with a decorated surface within the pertinent provision of paragraph 411 of the act of 1909, it was declared necessary to show the decoration was placed on the paper by a separate and independent decorative process; the phrase "whether produced in the pulp or otherwise" was interpreted to include a decorated effect produced by the intentional use for that purpose of a particular kind of felt or felt blanket. (Dunn *v.* United States, 2 Ct. Cust. Appls., 65.) A wrapping paper exhibiting a plaid or checkered design on its surface was held to come within that paragraph as wrapping paper with the surface decorated or covered with a design (G. A. 6937, T. D. 30083).

Brown kraft paper, manufactured in Norway and Sweden and generally used for wrapping paper, was held dutiable as wrapping paper under paragraph 396 of the act of 1897 rather than paragraph 402 of said act as printing paper. (Pritchard *v.* United States, 2 Ct. Cust. Appls., 247, of 1911.)

Wrapping paper imported from Norway answering to the description of section 2 of the Canadian reciprocity act of July 26, 1911, was held dutiable under paragraph 328 of the act of 1913 and not under said section 2, because impliedly repealed by the act of 1913. (Dow Co. *v.* United States, 7 Ct. Cust. Appls., 343.)

Wrapping paper with a surface design, claimed dutiable under paragraph 328 of the act of 1913 as wrapping paper not specially provided for, was held properly dutiable as classified under paragraph 324 of said act as "uncoated papers * * * with the surface or surfaces wholly or partly decorated or covered with a design, fancy effect, pattern, or character, whether produced in the pulp or otherwise, except by lithographic process." The board said that it was not the intention of Congress in framing paragraph 328 to include thereunder all wrapping papers, but only such papers as were not more specifically provided for elsewhere. (G. A. 7843, T. D. 36089, of 1916; followed in Abstract 44916 of 1922.)

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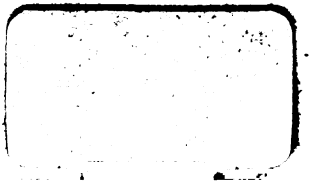

UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPHS 326 and 327 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

FINE PAPER AND ENVELOPES

Paragraph 326:
Fine Paper

Paragraph 327:
Envelopes

REVISED EDITION

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the United States Tariff Commission and transmitted to the Committee on Ways and Means. The series covers all of the articles and commodities provided for in the tariff act of October 3, 1913, and others not specifically provided for. It is arranged in the numerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in one pamphlet. In doing this industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and Index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and Index" the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Constant Southworth, of its staff, and of others.

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FINE PAPER AND ENVELOPES.

ACT OF OCTOBER 3, 1913.

Par. 326. Writing, letter, note, drawing, handmade paper and paper commercially known as handmade paper and machine handmade paper, japan paper and imitation japan paper by whatever name known, and ledger, bond, record, tablet, typewriter, and onionskin and imitation onionskin papers calendered or uncalendered, whether or not any such paper is ruled, bordered, embossed, printed, lined, or decorated in any manner, 25 per centum ad valorem.

Par. 327. Paper envelopes, folded or flat, not specially provided for in this section, 15 per centum ad valorem.

SUMMARY.

FINE PAPER.

Size and output.—Fine paper ranks fifth in value and sixth in tonnage among the kinds of paper produced in the United States, its 1921 production being nearly equal that of building paper, which was the next higher in the scale of production. The value of the output, however, is almost equal to that of wrapping paper and to that of newsprint paper. The output in 1919 was 343,762 tons, in 1920, 389,322 tons, and in 1921, 242,485 tons.

Relation of foreign commerce to production.—Imports of fine paper into the United States are in exceedingly small volume. The production in the United States at the present time supplies practically the whole of the domestic demand, imports amounting in 1921 to about one-third of 1 per cent of production. In 1914, when importations were largest, they amounted to only 0.44 of 1 per cent of production. Exports, on the other hand, amounted to 4.12 per cent of production in 1914 and increased to 15 per cent in 1919. Exports decreased in 1920 and 1921; yet in the latter year they still amounted to more than six times the imports.

European competitive conditions.—Nevertheless, there is much fear of foreign competition in fine paper. This is due partly to the fact that before the war certain European countries, especially Germany, periodically shipped to the United States amounts of fine paper which, although not large, were sufficient to cause serious disturbances in the American market. Antitrust laws forbade combinations on the part of American manufacturers to mitigate the effects of this practice. Another reason for fearing the potential competition of Germany and other countries is that before the war these countries could obtain skilled labor at a fraction of the price prevalent here. Also certain American manufacturers maintain that on account of the superior training and family continuity of European labor, it is impossible for American manufacturers to turn out as good a product. This is a moot point, some manufacturers declaring that American paper is as good as that made anywhere. It remains true, however, that the greater amount of labor and attention necessary per unit

of output for fine paper as contrasted with cheaper grades gives an advantage to countries producing under the conditions that prevailed in Europe before the war.

Until the war began, protection was adequate, except for the relatively small dumping of paper below production cost which may have occurred. During the last three years of the tariff of 1909 the rate averaged an ad valorem equivalent of nearly 45 per cent. Some manufacturers allege, however, that under the 25 per cent ad valorem rate inaugurated in October, 1913, the industry faced a dangerous competition. It is true that during the fiscal year 1914 imports reached a record volume. Then the war came and upset all existing competitive conditions. Abnormal post-war conditions of foreign competition attendant on depreciated exchange in Europe at present (October, 1922) show few signs of improvement. It is difficult to forecast the duration of the advantage certain European countries are said to enjoy by reason of the depreciation of their currencies.

ENVELOPES.

The envelopes referred to in this discussion include a large number made from kraft and manila papers in addition to those of fine paper. The industry in 1919 was in the hands of 106 concerns, capitalized at $24,754,818. Most envelopes are made by separate envelope manufacturing concerns, although some are made by the concerns making fine paper. Production in 1919 was valued at $39,664,077.

There is no tariff problem involved in the envelope industry. Imports in 1919 amounted to only four-hundredths of 1 per cent of domestic production.

Summary table [1]—Fine paper.

Year.	Domestic production.[2]	Imports for consumption.	Domestic exports.	Ratio to production.[3] Imports.[4]	Ratio to production.[3] Exports.[5]
	Short tons.	*Short tons.*		*Per cent.*	*Per cent.*
Fiscal year:					
1909	[6] 196,213	866	$1,688,780	0.19	4.27
1910		617	1,267,127		
1911		524	1,380,196		
1912		662	1,192,423		
1913		804	1,351,226		
1914	[6] 267,726	1,062	1,179,232	.44	4.12
1915		806	1,098,197		
1916		396	1,396,736		
1917	[6] 286,355	541	3,135,036	.15	
1918	[6] 356,772	225	4,560,084	.06	
Calendar year:					
1914		203	6,113,486	.06	
1919	[7] 343,782	386	13,188,165	.08	15.08
1920	389,322	464	5,906,230	.12	
1921	242,465	851	4,355,642	.35	

[1] Owing to the substitution in 1918 by the Department of Commerce of the calendar year for the fiscal year as a basis for reporting detailed import and export statistics, the same change has been made here, figures for both the fiscal year and the calendar year being given in 1918.

[2] Writing paper and envelopes.

[3] Production figures for 1909 and 1914 are from Bureau of Census; later figures from Federal Trade Commission.

[4] Based on quantity.

[5] Based on value.

[6] Calendar year.

[7] Value of production in 1919, according to Bureau of Census, was $37,740,806. The quantity figure shown was computed by the Federal Trade Commission.

Summary table—Fine paper—Continued.

	Imports for consumption.	Amount of duty.	Value per pound.	Equivalent ad valorem rate.
Fiscal year:	*Value.*			*Per cent.*
1909	$131,876	$45,914	$0.171	34.82
1910	158,513	62,526	.128	39.45
1911	175,722	77,777	.107	44.26
1912	176,035	79,443	.102	45.13
1913	182,439	77,508	.113	42.48
1914	203,171	57,266	.094	28.19
1915	168,080	42,013	.104	25.00
1916	118,907	29,721	.141	25.00
1917	203,721	50,929	.188	25.00
1918	162,820	40,704	.361	25.00
Calendar year:				
1918	182,487	45,622	.450	25.00
1919	340,037	85,009	.639	25.00
1920	520,063	130,016	.560	25.00
1921	683,141	170,785	.402	25.00

Summary table—Envelopes.

Year.	Domestic production.	Imports for consumption.	Domestic exports.[1]	Ratio of value of imports to value of production.	Imports for consumption.	Amount of duty.	Equivalent ad valorem rate.
Fiscal year:		*Thousands.*		*Per cent.*	*Value.*		*Per cent.*
1909	[2] $13,453,522	20,752		0.17	$22,751	$5,521	24.27
1910		18,979			21,228	5,849	27.55
1911					25,894	6,827	26.37
1912					18,653	5,145	27.58
1913					22,329	6,408	28.70
1914	[2] 18,481,013			.16	29,349	5,415	17.59
1915					14,710	2,206	15.00
1916					14,902	2,234	15.00
1917					18,692	2,802	15.00
1918					8,790	1,307	14.87
Calendar year:							
1918					5,122	768	15.00
1919	39,664,077			.04	14,291	2,144	15.00
1920					48,742	7,289	14.95
1921					42,586	6,388	15.00

[1] Included in exports of fine paper.
[2] Calendar year.

General Information.

DESCRIPTION.

Fine paper, as is evident from its tariff classification, has a great many subdivisions. It consists of paper made from a high grade of raw material, principally cotton and linen rags, also cotton linters, esparto, and special fibers. Sulphite wood pulp, however, is being used increasingly in making writing paper. It is impossible to exclude such medium-grade writing papers as those containing wood pulp from the general heading of fine paper, because it is desirable to treat together all classes of writing paper.

Writing paper and other fine papers are much the same in texture and in the raw material used as certain high grades of book paper, except that watermarks and special finishes are used to a much greater degree. Some of the paper described in this discussion is used for printing purposes. However, this amount is relatively

small, and is better considered in connection with fine paper than with book paper.

Classification.—It is impossible to differentiate satisfactorily the manifold varieties of fine paper. This is particularly true with the principal group of fine papers, namely, writing papers. Writings, bonds, and ledgers are classified separately, yet bonds and ledgers are actually writing paper. There is no uniform system of classifying bonds, ledgers, papeteries, or linens by raw-material content, by size, or by the use to which they are to be put. Every variety overlaps one or more varieties to some extent. Some varieties bear two names, such as "linen bond." In actual practice, in the mill, the product will often be named according to the dimensions of the finished sheet turned out, because the mill ordinarily sells sheets of certain standard sizes to makers of papeterie, other standard sizes to makers of bond, and yet others to makers of ledgers.

Bonds, ledgers, papeterie.—In general, however, the distinctions in terminology are as follows: Bond paper (which derives its name from the fact that it was first used as paper for engraving bonds) is usually of medium weight, is not highly calendered, and hence has not a highly polished surface, and tends to be translucent. When handled, it often has a tendency to rattle. The cheapest bond paper is made of pure sulphite wood pulp and the best of 100 per cent new linen rags. Intermediate grades are made of various proportions of sulphite and old and new cotton and linen rags.

Ledger paper is usually harder, tougher, and has a more polished surface than bond paper. Oftentimes it is heavier also. There are no bond papers of as great a weight as the heaviest ledger papers. A smooth polished surface on which erasures can easily be made is necessary, for ledger paper is most frequently used for bookkeeping, public records, and similar purposes. Strength and durability are also naturally requisites of this sort of paper. It is consequently ordinarily made entirely or in greater part of rags.

Papeterie is the term applied to writing papers for putting up in boxes as stationery. It differs usually from bond and ledger in having a rather soft, coarse texture. It has a dull, rough finish, for, like bond paper it often is not calendered. It is usually rather heavy.

Linen.—Of all the terms for writing paper the word "linen" is perhaps the most loosely used. Mr. R. W. Sindall, an English paper authority, some years ago defined linen paper as paper "containing no fibrous ingredient except linen rag." In America at the present time the word linen seems to bear little relation to the raw material used. Linen paper is usually made out of cotton rags, but may contain some linen rags. It may be stated safely that no paper is made in this country entirely out of linen rags, except on orders for certain special purposes. A cotton-rag paper ordinarily serves the purpose of writing just as well as a linen-rag paper. On the whole, the word linen may be taken to denote a high-class product; certain high-grade ledger paper, for instance, is termed linen ledger, though it may or may not contain a small percentage of linen rag.

Finishes—linen, kid, etc.—The term linen finish, however, has a more definite significance. A linen finish may be applied to any writing paper. The sheets of paper from the drying lofts, still slightly damp from the animal-glue sizing bath, are placed between

sheets of pure linen cloth, a sheet of zinc or heavy tin being placed between each two sheets of linen. When a pile of paper, linen, and metal sheets about 4 inches thick has been built up it is passed between press rolls, the surface of the linen cloth being thus imparted to the paper. This finish may be given any writing paper, except ledger and record paper. It is occasionally, but not often, given to bond paper. Other finishes such as kid, vellum, and antique are often given. Kid and vellum finishes resemble prepared kid and calfskin, respectively. Antique finish imparts a soft velvety feeling to the paper.

These finishes, given writing paper, are to some extent used also in making the best qualities of book paper.

Other varieties specified in tariff law.—Letter, note, record, tablet, and typewriter papers, as specified in the tariff, are merely subdivisions of the kinds discussed above, classified according to use. Often it is merely the size or the form in which the paper is cut for a particular purpose that determines its tariff classification. Tablet paper is often of material inferior to that used in the other grades named. Drawing paper is a high-grade product made chiefly of rags. In England esparto is much used for drawing paper. Handmade papers, when imported, are usually extra fine and fancy papeteries or special stationery. Japan paper is a paper of a pronounced silky texture, formerly made exclusively from the bark of the mulberry tree, beat out by the Japanese with mallets. Now, however, it is made also of other vegetable fibers. It is used principally for writing, printing, tapestry, imitation Japanese wall hangings, and to some extent in art-craft books. Onionskin paper is a very thin paper, made principally of rags. It is almost transparent, and has a highly glazed surface and a texture almost like the skin of an onion.

Bristol boards.—Bristol boards, because of their classification with cardboard in the tariff act of 1913, and because of their greater thickness compared with other kinds of paper, have been discussed in another Tariff Information Survey.[1] Nevertheless, one kind of Bristol board is really a high grade of writing paper. Bristol board of this type is sometimes made of two or more sheets of fine paper pasted together after they come off the Fourdrinier machine. Some so-called index Bristol board, for use in card-index systems, is made as a single sheet on a Fourdrinier machine. In the opinion of the Bureau of Standards only this kind is entitled to the name Bristol board. In many cases it is impossible to distinguish such a Bristol board from heavy ledger paper, although the fiber used in ledger paper is supposed to be longer, with the result that ledger paper held against the light should appear mottled, while Bristol board should have a uniform appearance. In practice often even this distinction does not exist. In fact, some Bristol board is called index ledger Bristol. Consequently the Tariff Commission recommended that Bristol board of this kind (both pasted and single ply) be separately denominated as "solid Bristol board made on a Fourdrinier machine."

Another type of Bristol board of inferior material is made on a multicylinder machine called filled Bristol. One of the principal varieties of this type is known as bogus Bristol. The method of

[1] See Tariff Information Survey, Building Paper, Paper Board, and Filter Masse.

production and tariff classification of cylinder-machine-made Bristol are discussed in the survey on paper boards.

Tariff interpretation of handmade papers.—It is to be noted that the papers classified under paragraph 326 of the act of 1913 include certain varieties which, if admitted according to the use specified for them, would fall under a different classification. These are copying, printing, tissue, and bibulous papers that are handmade. Handmade papers of all kinds are dutiable under paragraph 326 instead of under the paragraphs classifying them according to use or texture. (See G. A. 7979, T. D. 36767; Abstract 43915; 2 Ct. Cust. Appls., 237; G. A. 8168, T. D. 37623.)

Envelopes.—The envelopes treated in this discussion, and admitted under paragraph 327, are made of a considerably greater variety of materials than those named in paragraph 326, although the latter form one of the most important groups of constituents of envelopes. Envelopes made of surface coated, parchment, and similar papers, however, are dutiable under paragraph 324 and are discussed in another survey.

Kraft paper (made of sulphate wood pulp) forms the basis for a considerable class of envelopes. These are ordinarily large, strong envelopes and are used mainly for mailing circulars, photographs, pamphlets, and catalogues. Manila envelopes constitute an important class. These are also usually large and strong. They are much used for filing-cabinet purposes and, like kraft envelopes, for mailing circulars. A great many manila and kraft envelopes are made in all sizes with metal clasps for wrapping and for mailing a great variety of small articles. A huge number of envelopes are made to carry the business correspondence of the country and advertising matter of light weight. The great preponderance of these are made of wood pulp, principally sulphite. The stamped envelopes sold at post offices are of this type. Oftentimes the envelopes used by business concerns are of inferior material to the correspondence sheets they contain. The best grade of envelopes (other than ornamental specialties) are those made to be used with fine stationery for social correspondence. These are ordinarily made of the same kind of paper as the paper they contain, and thus may range in content from all sulphite to all new rag.

DOMESTIC PRODUCTION.

Comparison with other kinds of paper.—Fine paper ranks sixth in tonnage among the varieties of paper made in America, being exceeded by paper boards, newsprint, book paper, wrapping paper, and building paper. In 1921 the tonnage of fine paper produced amounted almost to that of building paper, the next higher in scale of production. In value, however, fine paper compares favorably with these other grades. In 1919 it was fifth, but was only slightly less than that of newsprint and that of wrapping paper.

Raw materials.—The principal raw materials of the fine-paper industry are cotton and linen rags. As noted above, chemical wood pulp is much used in the cheaper grades of writing paper. In England esparto grass is used to a considerable extent in making medium quality writing paper, although its principal use is in the manufacture of a high-class, soft-textured book paper for lithographic

and art illustration. Esparto grass grows wild in Spain
hern Africa, the better grade coming from Spain. It is
d compressed and shipped in large amounts to England.
ıantities of other fibers are used in the manufacture of
per.

lary materials are rosin, alum, dyes, china clay, agalite,
ıal glue. Rosin is used for sizing purposes, that the finished
ay take ink without blotting. Alum is used to precipitate
ı and any coloring materials which may be used. Filler is
tle used in the fine-paper industry. Agalite and English
ay are the most common fillers for writing paper. Agalite
heaper of the two. Glue made from animal hides is much
r sizing fine paper after it has been made on the paper
e. Rags and chemical wood pulp and English china clay
only ones of these materials that are imported. Obtaining
ers presents no difficulty and no tariff problem; the amounts
'e comparatively small.

ı: Rags are obtained both in the United States and from
. They are admitted free of duty. Both new cotton and
ːuttings and old rags are imported. New rag cuttings are
ɔrincipally by the mills making the finest grades of paper.
are a number of mills in Dalton, Mass., for instance, which
ɔ wood pulp and no old rags whatsoever. The development
; the war of special processes such as the making of photo-
ic paper, the hydrating process, and the celluloid process,
ısed the demand for high-grade new rag cutting. Before the war
'ts averaged annually more than 100,000 tons (not including
ːn rags), most of which came from France, Germany, the
ːd Kingdom, Holland, Belgium, and Canada. During the war
imports steadily declined, until in the calendar year 1918 they
ınted to less than 2,000 tons. In 1919 they improved to 47,000

In 1920 and 1921 they increased to 136,503 tons and 58,397
respectively. Thus there is no trouble and no tariff problem
lved in importing adequate stocks of the principal raw material.

ood pulp: Sulphite wood pulp and even a little soda pulp are
in making the cheaper grades of writing paper. Soda pulp
es the same purpose as esparto pulp in producing a rather thick
ːr of soft, flexible texture. However, importations of chem-
wood pulp into this country are principally for other kinds of
er. The great demand for wood-pulp papers of other sorts,
ticularly printing paper, has helped to raise the prices and de-
ıse the available supply of wood pulp for making writing paper.
wever, the greater part of the wood pulp used by the American
ting paper industry is available in the United States. The re-
inder is imported principally from Canada and secondarily from
eden. It comes in free.

English china clay: English china clay, used to a limited extent
a filler in making writing paper, comes, of course, from England.
ıny paper manufacturers using it esteem it so much superior to
mestic china clay as to be practically a separate commodity.

Coloring materials: Coloring materials used to be imported from
ːrmany, but are now largely domestically produced. Experts
ate that the American colors so far developed are as good as the
erman dyes, but that the domestic industry has not yet developed

the great variety of German colors. Also, there are certain colors, such as the so-called indanthrene colors, which have been developed, but have not yet been made in sufficient quantity to be available to the paper industry. In particular, the industry needs indanthrene blue.

Envelope paper: As already noted, the materials of which envelopes are made include kraft and manila paper and certain other papers, as well as the fine paper discussed in this survey.

Equipment. Practically all the machinery and other equipment of the fine paper industry is manufactured in this country. Some paper machinery was purchased before the war from England and Germany. The American product appears, however, to be as satisfactory as any foreign paper machinery. The American writing-paper manufacturer is in as advantageous a position to secure equipment as the manufacturers in any other country.

Methods of production.—Fine paper is produced in the same way as printing paper, the process of making which is fully described in another survey, except that it often undergoes additional processes after leaving the Fourdrinier machine proper.

Preliminary processes, washing, beating, refining: The old rags are purchased in bales. They are sorted in the rag room and cut up by hand into smaller pieces, after which they usually go through a machine which cuts them into yet smaller pieces. The next process is to revolve them rapidly in a large hollow cylinder, in order to shake out the dust, buttons, and other foreign matter. They are then boiled in lime or in caustic soda in rotary, horizontal, cylindrical boilers. The resulting material, called half stuff, in which the threads are still largely existent in the woven form as cloth, is thereafter placed in washers and thoroughly washed. The washer is a large open oval tub divided in the middle lengthwise by a midfeather, so that a continuous channel exists in which the rag circulates in water. This machine is very much like the beater, described in the survey on printing paper. It is equipped with a cylindrical roll fitted with knives which revolve over a concave stationary bedplate likewise equipped with knives. The turning of this roll causes water and rags to circulate, the rags being cut up finer by the knives of the roll and bedplate. A revolving drum covered with wire cloth and partly submerged, continuously removes the dirty water while the clean water is being put in. After the washing, bleaching solution is added to bleach the rag stock, the bleach being mixed thoroughly by continued running of the washer roll. The stock is then clean and white and is ready for the beater. The fibers are not yet isolated, the stock being in the form of little bundles of threads which still retain in a small degree the appearance of the original woven cloth.

The rags are treated in a similar way, except processes. Sorting quality do not require even need to be added to prevent the a short one or is dis-

chemical wood pulp usually bought and not manufacturing companies' are the principal into the beater, where the paper-making

gins in earnest. Defective paper from the paper machines netimes thrown direct into the beater and given a prelimi- ng.

ıe beater[2] go also all the other materials which actually the texture of the paper. These are coloring matter, the ually rosin), the precipitating agent (alum), and the loading material (usually agalite or English clay), if any is used. beating is finished, the resulting stock is further refined in engine, consisting of a hollow steel cone inside which revolves cone.

rinier machine, finishing processes: The stock is then con- nuch diluted with water, to the Fourdrinier machine where de into a sheet of paper in much the same way as printing The cheaper grades of writing paper, particularly the all- variety, are made on machines almost exactly the same as aking machine-finished paper. They are of medium size and nd usually have calenders and rolls on the machine proper, give the paper its final finish and roll it up. The process is mplete, except for trimming and cutting the paper into the sheet sizes.

better varieties, however, which really constitute fine paper, de on slow, comparatively narrow machines. The paper is n the ordinary way and dried over steam-heated cylinders. ot calendered on the machine, but is passed through a tub of -glue sizing, made of animal hides. This imparts a surface paper that adapts it for receiving ink. Various methods of tub-sized paper are used. The best results are obtained from r loft drying. In this system the paper, wet from its tub-sizing is cut into sheets at the end of the paper machine and conveyed ts, where the sheets are hung in small bunches over horizontal en poles and dried by hot air. They are then smoothed or ironed remove the "cockle" or large wrinkle caused by their suspension he poles. This is the treatment ordinarily given fine bonds and igs, Bristol board, and, to a less extent, ledger paper. In many the sheets are calendered. Bond paper, however, is seldom more than a superficial calendering between steel and cotton Ledger paper and Fourdrinier-made Bristol board are always highly calendered. Ledger paper is sometimes dried on the ine in a manner that allows atmospheric drying and yet also the ig up of the paper dry at the end of the machine. This method ists in passing the paper from the tub-sizing bath over a very series of hollow, cylindrical rollers, the round surface of which ists of wooden cleats spaced a few inches apart. The atmosphere s the paper as it goes over these rollers. It is then rolled up and ndered. This is known as the Barber system. It is questionable, ever, if the results are as good as those of loft drying. Some ting paper is passed over steam-heated rollers after being tub d, but this process does not yield as fine a product as the other thods described.

As already stated, a great many special finishes, the most important which is linen finish, are given to the fine papers.

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[2] The beater differs from the washer merely in the adjustment and sharpness of the knives and in not essing the washing drum.

Watermarks: Watermarks are almost universally used in making this grade of paper. These are ordinarily put in the paper by means of a dandy roll which stamps the design into the paper, causing a thinning of the pulp at that place. The ordinary watermark is a brand or trade-mark. Laid and so-called "wove" papers receive a sort of watermark from the dandy roll or from a special molding of the Fourdrinier wires. A laid paper is watermarked by a number of lines laid close together, intersected by lines at right angles, placed about 1 inch apart. A wove paper is a paper made on a woven wire, in which the wires cross and recross at even distances apart in a manner quite distinct from laid wires.

Envelopes: The great bulk of envelopes are made in special envelope-making plants on envelope machines which fold the paper into envelope form and put on the gumming material or clasp.

Organization.—The fine-paper industry is conducted by mills of smaller average size than those making newsprint, wrapping paper, and other papers of large output. This is partly because the nature of the product allows and requires a greater concentration of labor on quality as opposed to quantity, and partly because the processes of making wood pulp are seldom engaged in by fine-paper mills. They tend to confine themselves to preparing the rags and making them into paper, purchasing direct whatever wood pulp they need. Some mills of long-established reputation have only a few small paper machines and a few beaters and auxiliary machines. Their total product is a comparatively small amount of branded paper of great excellence.

Number of mills: In July, 1922, there were reported to be 103 mills in the United States making fine paper. The following table shows the number of mills making the principal grades of fine paper in 1920, according to reports made by the mills to Lockwood's Directory of the Paper and Allied Trades. Of course one mill in most cases produces a number of different kinds of paper:

Writing	67	Onionskin	11
Bond	61	Wedding	8
Ledger	37	Superfine	8
Drawing	21	Papeterie	7
Linen	18	Record	5
Tablet	17	Vellum	4
Typewriter	12		

In 1919 there were 106 establishments making envelopes in the United States, capitalized at $24,754,818. The manufacture of papeterie (stationery folded and prepared for writing purposes) and of paper boxes, as well as printing, is frequently carried on in connection with envelope making.

Geographical distribution.—The writing-paper industry is the most concentrated of any large branch of the paper industry. Two regions in western Massachusetts turn out nearly one-half of the fine paper of the country. These are the region including Holyoke, Mittineague, and other towns in the Connecticut River Valley and the region around Pittsfield in the valley of the Housatonic, including Dalton, Lee, Adams, Housatonic, etc. Other States of importance in writing-paper manufacture are Wisconsin, Pennsylvania, and Ohio.

Massachusetts is the principal State in the manufacture of envelopes. Illinois, Ohio, New York, and Connecticut follow in the order

Small amounts are produced in Pennsylvania and Missouri ttering amounts in other States.

ry of the industry.—The development of the writing-paper y has proceeded with greater continuity than that of any ranch of the paper industry. There has been no such shift in .terial as has taken place in making some other kinds of paper. rere the first raw material for fine paper in this country and e the principal raw material.

manufacture of envelopes in the United States is said to have about 1840. The census of 1849 was the first at which statis- ere presented, two establishments reporting with a product at $45,000. The number of establishments and the value of cts for each census from 1859 to 1919 are given in the following

Year.	Number of establishments.	Value of products.	Year.	Number of establishments.	Value of products.
.....	16	$763,700	1904.....	72	$10,222,366
.....	22	2,277,541	1909.....	78	13,458,522
.....	12	3,000,617	1914.....	90	18,481,013
.....	41	4,855,680	1919.....	106	39,664,000
.....	51	6,299,330			

mestic production and consumption.—Fine paper: The produc- of fine paper increased from 112,707 short tons in 1899 to 343,762 in 1919, and 389,322 tons in 1920. In other words, it trebled vo decades. In 1921 the industrial depression caused production ecrease to 242,485 tons, but it revived to 200,021 tons in the first n months of 1922. The value of the output increased from 895,974 in 1899 to $87,740,806 in 1919. No value figures are lable for years since 1919.

1 1919, 250,075 tons, or nearly four-fifths of the total fine-paper duction, consisted of writing paper as follows:

	Tons.
ger and highest grade.....	30,584
dried.....	48,564
dried.....	28,786
hine dried.....	59,674
hite bond.....	82,467
Total.....	250,075

As already noted, Massachusetts is the principal seat of the fine- per industry. The principal States producing writing paper are ssachusetts, Wisconsin, Pennsylvania, Ohio, and New Hampshire. e principal ones producing other grades of fine paper are Pennsyl- nia, New York, and Massachusetts.

Domestic production is sufficient to supply practically the whole of e demand for domestic consumption and to export a surplus. In e calendar year 1921 the United States imported an amount equal about one-third of 1 per cent of domestic production. As pointed t in the section on raw materials, the United States produces the eater part of the raw materials locally and does not have much ouble securing the remainder from abroad.

Envelopes: Production of envelopes, as has already been noted, creased from $6,299,330 in 1899 to $39,664,077 in 1919. No later

figures are available. Domestic production adequately meets the demand for domestic consumption; imports amounted to only four-hundredths of 1 per cent of production in 1919, and have greatly decreased since that time.

Domestic exports.—The exports of fine paper up to 1922 were not reported by quantity, and writing paper and envelopes were jointly reported. Exports of writing paper and envelopes increased in value from $1,267,117 in the fiscal year 1910 to $13,188,165 in the calendar year 1919. This represents in all probability at least a quadrupling in quantity. The increase began in 1916 and continued through 1919. In 1920 and 1921, however, exports decreased to $8,908,230 and $4,355,642, respectively. In the first seven months of 1922 they amounted to only 3,483 tons, valued at $1,129,732.[3]

In 1909 the value of exports of writing paper and envelopes amounted to 4.27 per cent of the value of domestic production, and in 1914 to 4.12 per cent. In 1919 the proportion exported was 15 per cent. In the first seven months of 1922, it was only 1.7 per cent by quantity.[4]

Destination of exports: The United States exports all over the world, principally to Australia, Brazil, Argentina, Cuba, Mexico, Philippine Islands, China, and Canada. Noteworthy in the great general increase in exports of writing paper from the United States is the decrease in exports to Canada. In the fiscal year 1913 the United States sent to Canada $550,624 worth of writing paper and envelopes, or about 40 per cent of the $1,351,226 total of writing-paper exports, to all countries. In the calendar year 1921, with prices considerably higher, this country sent to Canada only $319,743 worth out of a total of $4,355,642, or about 7 per cent.

Decrease in exports: The following table shows, month by month, from July, 1918, to December, 1921, the increase in exports of writing-paper and envelopes to a maximum in February, 1919, their diminution after June of that year, their temporary increase in the winter of 1920–21, and their decrease to a new low level for post-war exports in the latter part of 1921:

Month.	1918	1919	1920	1921
January		$1,794,365	$593,883	$1,372,442
February		2,594,766	697,277	831,667
March		1,806,110	685,282	374,251
April		1,161,139	623,575	322,678
May		1,288,732	698,465	243,618
June		1,217,854	699,178	177,092
July	$538,426	472,286	760,084	163,696
August	597,825	672,435	472,990	146,519
September	431,588	658,011	588,023	209,164
October	539,947	554,998	731,849	179,553
November	753,660	495,941	1,020,369	162,828
December	731,924	471,528	1,317,255	172,134

FOREIGN PRODUCTION.

The World, 1906–7.—In an appended table (p. 19) is shown the world's production in 1906–7 of fine paper, free from wood pulp. This table is of interest as giving some idea of comparative production in normal pre-war times, even though the year selected is nearly two decades removed. However, the paper covered by this table,

[3] Including Bristols and Bristol board.

[4] Not including envelopes.

ıs "fine paper free from wood pulp," quite evidently includes addition to writing paper and the other varieties discussed urvey. For instance, the United States and Canadian ə much higher than official figures published by this country da. There is probably a considerable amount of high-class er included, as well as other kinds of paper. Nevertheless, is of value as showing the relation of rag-paper production ɔuntry to that in other countries. Esparto may enter to ciable extent into the paper made in certain European as reported by this table.

ıited States appears to have had nearly twice the production earest rival, Germany. The United Kingdom produced ly as much as Germany. France and Austria-Hungary were nd fifth, respectively. Italy, Sweden, Canada, and other ı in Europe came next. It is the handmade and very finest f the United Kingdom, France, and Germany that are most compete with fine paper made in the United States. Italy ːes some handmade papers of very fine quality.

a, 1917 and 1919.—The Canadian fine-paper industry, although ll, is developing rapidly. Production of fine paper in Canada ł from 7,414 tons, valued at $1,999,778, in 1917 to 16,840 tons, ,t $5,405,666, in 1919. Writing paper represented the greater these amounts, increasing from 7,217 tons in 1917 to 10,230 1919. There are seven concerns in Canada making writing Although production of fine paper in Canada in 1919 was only ntieth of the amount produced in the United States, while the ıon of Canada is one-twelfth that of the United States, Canada bably soon have as great a per capita output of fine paper as ited States. Quebec produces a little more than half the paper and practically all the other fine paper made in Canada. rtheless, Canadian competition in fine paper need not be particularly by the United States. Although power is cheaper ,da than here, the conditions of labor cost, raw material, and ıre not such as to give Canada any particular advantage over ited States in fine-paper production, except in the wood-pulp ıs.[5] Canada no longer has cheaper labor for making paper ıe United States. It is said that Canadian labor for this ə is not so skilled or efficient as American labor, nor can , get rags more easily than the United States. In the last ˈears Canada has imported annually from the United States $400,000 worth of writing paper, papeteries, and envelopes, .parison with practically negligible exports of these items to ıited States. This fact is particularly significant when one ɔrs that in the fiscal year ended March, 1921, Canada exported)0 worth of writing paper in comparison with imports of ; paper, papeteries, and envelopes amounting to $441,000. ıer words, even with exports more than twice imports, and ; all the imports coming from the United States, Canada found ırket for writing paper in the United States. In the year March, 1922, total Canadian exports dropped to $84,000, but ts from the United States continued in little diminished volume.

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ariff Information Survey, Wood Pulp, for relative costs of producing wood pulp in Canada and ɬtates.

IMPORTS.

Fine paper.—In the calendar year 1921 imports amounted to one-third of 1 per cent of domestic production. This was greater than during any previous year since 1914. In the fiscal year 1914 they were forty-four hundredths of 1 per cent of domestic production. Imports increased from 386 tons in the fiscal year 1909 to 1,082 tons in the fiscal year 1914. During the war they decreased considerably, but increased to 850 tons in the calendar year 1921.

Until after the fiscal year 1918, statistics of imports of fine paper distinguished only between paper ruled, bordered, embossed, lined, printed, or decorated, and fine paper not so treated. All but a very small proportion was in the latter category. In the fiscal year 1915, for instance, imports of fine paper thus specially treated amounted to about one-fifteenth of imports of fine paper not so treated. In the fiscal year 1918, however, this proportion increased to between one-fifth and one-sixth. In the second half of the calendar year 1918 imports were subdivided. Appended tables (pp. 21 and 22) show that imports in the calendar years 1919, 1920, and 1921, subdivided somewhat according to the arrangement in the tariff law. About two-thirds of the total in each of the three years consisted of writing paper not ruled, decorated, etc., including handmade, Japan, and onionskin paper. Imports of drawing paper represented most of the remainder; those of other kinds of fine paper were almost negligible. For instance, imports of so important a class of paper as ledger, bond, and record, amounted to less than 5 tons in each of the three years.

Envelopes.—Total imports of envelopes increased from $10,720 in the fiscal year 1907 to $29,349 in the fiscal year 1914, which was the largest amount imported in any year, and equaled about one-sixth of 1 per cent of production. After 1914, imports decreased. In the calendar year 1918 they were only $5,122, but recovered to $14,291 in the calendar year 1919, which represented one twenty-fifth of 1 per cent of production. Imports in 1920 and 1921, however, increased to $48,742 and $42,586, respectively.

From the fiscal year 1910 to October 3, 1913, when the different varieties of envelopes were reported together, the figures indicate that the value of annual imports of plain envelopes ran approximately the same as that of envelopes bordered, embossed, printed, tinted, decorated, or lined.

No figures by countries are available for imports of fine paper or envelopes.

PRICES.

Domestic, 1910–1922.—The prices of fine paper remained fairly constant from 1910 until the spring of 1916. Writing paper was steady at a range for different varieties of 4½ cents to 13½ cents per pound. The maximum range for different kinds of bond paper was 5 to 55 cents, and for ledger 5 to 30 cents. Prices increased considerably in 1916. During 1917, 1918, and 1919 they remained at about the level they reached in 1916. During the spring and summer of 1920 they increased again, reaching a high point in July that in most cases was maintained, at least nominally, up to the early part

the spring of 1921 they decreased materially. The
reality been a buyers' market for some months before
ices were lowered from the inflated prices of the early
There was a gradual decrease during the remainder
ing the first half of 1922 there was little change in prices,
ıe end of the summer all quoted prices were withdrawn
n of an increase.

ı with Canadian.—The following table shows a comparily prices per pound in New York and Toronto during price is the minimum price prevailing on the available the 15th of the month.

[From Paper Trade Journal.]

Month.	Bond.		Ledger.		Writing.	
	New York.	Toronto.	New York.	Toronto.	New York.	Toronto.
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
.....	11	13½	13	18	12	13
.....	13	13½	16	18	13	13
.....	13	15½	16	18	13	13½
.....	13	15½	16	18	13	13½
.....	17	15½	16	18	14	13½
.....	17	15½	16	18	14	14½
.....	19	15½	18	18	15	14½
.....	19	17½	18	20	15	15
.....	19	19½	18	20	15	15
.....	19	19½	18	20	15	15
.....	19	20½	18	20	15	15
.....	19	23½	18	24	15	20½

al the Toronto price was higher. Ledger paper sold at a
e in Toronto than in New York. The same was true for
pt from May to August, when it sold higher in New York.
aper commanded approximately the same price in both
ɔ to December, when the Toronto price jumped more than
Bond and ledger participated also in the December rise—
a time of general dullness in the paper business.

TARIFF HISTORY.

s of tariff acts, 1883 to 1913.—By the acts of 1883 and 1890
bore a duty of 25 per cent ad valorem. The designation
es differed somewhat under these early acts from that
later ones. Paper, n. s. p. f., was included in the same para-
oviding thus for any varieties of fine paper not actually
Paper envelopes were made dutiable in 1883, at the same
ne paper, viz, 25 per cent ad valorem, but the act of 1890
ed a specific duty of 25 cents per thousand envelopes. The
94 lowered the fine-paper duty to 20 per cent ad valorem,
he duty on envelopes the same, but placed a duty of 30 per
writing paper and envelopes, embossed, engraved, printed,
ıented.
ːt of 1897 provided a combination of specific and ad valorem
ine paper over 15 pounds in weight per ream bearing a
uty than paper up to 15 pounds. A 10 per cent ad valorem
ı addition to the above duties, was placed on fine paper

ruled, bordered, embossed, printed, or decorated. This change operated to increase the 20 per cent ad valorem duty of 1894 on fine paper not ruled, embossed, etc., to an ad valorem equivalent of about 33 or 34 per cent and the 30 per cent duty on fine paper ruled, embossed, etc., to an ad valorem equivalent of about 36 or 37 per cent, as shown by the import figures for the fiscal years 1907 to 1909. The duty on plain envelopes remained at 20 per cent ad valorem, that on envelopes bordered, embossed, etc., being raised from 30 to 35 per cent ad valorem.

The 1909 tariff law retained a combined specific and ad valorem duty on fine paper and the additional 10 per cent ad valorem on paper ruled, embossed, etc. This actually worked out to equalize the ad valorem equivalent duty collected on both grades and to increase it considerably over the 1897 rate. It ranged between 39 and 45 per cent, while the 1909 tariff was in operation. Paper envelopes remained at the 1897 rates.

The 1913 tariff abolished the distinction between fine paper and envelopes plain, and fine paper and envelopes ruled, bordered, embossed, or otherwise specially decorated in any manner, and imposed a flat ad valorem duty of 25 per cent on fine paper and 15 per cent on envelopes.

Effect of tariff on imports.—It is not possible to distinguish the effect of the tariff on the imports of fine paper. Under the tariff of 1909 imports suddenly increased and maintained or added to this increase during the whole time that the act was in operation, even though the equivalent ad valorem duty was considerably more than it had been previously. In the first year of the operation of the tariff act of 1913 (the fiscal year 1914) imports increased about a third. Since that time the war and its results have obscured the effect of the tariff. At any rate, it is certain that up to and including 1921 imports remained negligible. Imports of envelopes throughout the whole period concerned were less than one-fifth of 1 per cent of production and apparently had no connection with the level of the tariff.

COMPETITIVE CONDITIONS.

Europe before the war.—Before the war, Germany, France, the United Kingdom, and, to some extent, Italy sent high-grade writing paper to the United States. The tariff, however, was comparatively high, averaging nearly 45 per cent in ad valorem equivalent under the tariff act of 1909, although it was reduced to 25 per cent in 1913. The quantities imported were not large, the greatest amount entering in any year being a thousand tons in the fiscal year 1914, which was less than one-half of 1 per cent of domestic production.

Charges of dumping.—The complaint was often made, particularly in the case of Germany, that, like other kinds of paper, writing paper was dumped in the United States markets, at a price much below its cost of production, to ease a glut in the European market. Consignments of this sort, although relatively small, inflicted damage beyond what would be expected from the extent to which they increased the supply on the market. American antitrust laws prevented manufacturers here from combining to purchase the foreign offerings and from bringing them on the market in an orderly fashion. In spite of this, however, imports of fine paper did not seriously affect the American industry.

on to Europe.—At the present time (1922) very little ing imported and the industry is practically free from ition. Even in 1921 when intense international com- led, the imports of fine paper into the United States nly one-third of 1 per cent of domestic production.

Canada.—Although Canada is building up a fine-paper h in times of prosperity often exports an amount con- xcess of the fine paper imported into Canada, prac- t of these exports is sent to the United States. On d Canada imports regularly a considerable amount of m the United States. Only seven firms now make in Canada. Canada has not as satisfactory a supply r for making paper as has the United States; unskilled no cheaper in Canada than in this country. Rags are ly available to Canada than to the United States. r is Canada's only advantage except in the lower grades per, where wood pulp is the principal material used and less than it does the United States.

ss in recent years domestic exports to Canada have uch less important part of the total writing paper ex- e of an attempt on the part of the Canadians to produce pply of fine paper. As was pointed out above, domestic riting paper and envelopes to Canada decreased from of total exports to all countries in the fiscal year 1913 in the calendar year 1921. This is attributable largely npt now being made in Canada to build up Canadian general and to emphasize the desirability of production of as large as possible a portion of the commodities

STATISTICAL TABLES.

Fine paper—Production in United States, 1899–1919.

[From Federal Census.]

te.	1899		1904		1909		1914	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
ER.	*Short tons.*		*Short tons.*		*Short tons.*		*Short tons.*	
.....	54,791	$8,751,556	76,503	$13,484,650	85,268	$15,580,692	84,506	$16,619,157
.....	10,332	1,024,521	17,333	2,066,243	27,379	3,271,402	29,948	3,666,972
.....	16,824	1,379,594	19,857	1,738,457	26,426	2,339,130	(1)	(1)
.....	3,315	444,479	6,552	816,815	16,379	2,100,911	18,485	2,039,998
.....	2,001	323,672	3,430	471,269	2,711	507,694	2,342	446,442
.....	2,941	299,048	8 259	743 611	10,962	1,166,273	60,070	5,864,688
.....	90,204	12,222,870	131,934	19,321,045	169,125	24,966,102	195,351	28,637,257
PAPER.								
.....	3,120	369,917	2,238	583,970	12,825	1,168,937	15,556	1,467,640
.....	706	66,844	.....	.....	(1)	(1)	11,004	866,428
.....	13,264	2,547,072	4,272	1,486,761	4,327	1,857,876	(1)	(1)
.....	6,119	689,271	8,388	848,394	11,936	1,083,723	25,817	3,083,593
.....	22,503	3,673,104	14,898	2,928,125	29,088	4,110,536	52,377	5,417,661

1 "All other States."

Fine paper—Production in United States, 1899–1919—Continued.

Kind and State.	1919	
	Quantity.	Value.
Ledger and highest grade:	*Short tons.*	
Massachusetts	13,584	$7,512,822
All other States	17,000	4,742,145
Total	30,584	12,254,967
Pole dried:		
Massachusetts	39,510	16,452,684
All other States	9,054	3,416,294
Total	48,564	19,868,978
Air dried:		
Wisconsin	19,363	6,070,369
Massachusetts	6,170	2,465,349
All other States	3,253	978,900
Total	28,786	9,514,618
Machine dried:		
Massachusetts	30,856	7,629,046
All other States	28,818	7,036,262
Total	59,674	14,665,308
Sulphite bond:		
New Hampshire	17,438	3,315,233
New York	2,721	657,778
All other States	62,308	13,511,168
Total	82,467	17,484,179
All other fine paper:		
Ohio	31,771	6,163,332
Pennsylvania	22,684	4,178,187
New Hampshire	6,903	1,249,799
All other States	13,750	2,361,436
Total	75,108	13,952,756
Total fine paper	325,183	87,740,806

Envelopes—Production in United States, 1904–1919.

[From Federal Census.]

States.	1904	1909	1914	1919
	Value.	Value.	Value.	Value.
Massachusetts			$4,979,533	$10,869,000
Illinois			2,887,406	6,431,000
Ohio			2,811,649	5,893,000
New York			2,546,869	5,288,000
Connecticut			1,830,181	(1)
Pennsylvania			1,301,281	1,903,000
Missouri			908,353	1,952,000
California			203,000	(1)
Minnesota			186,897	674,000
All other			825,844	6,654,000
Total	$10,222,366	$13,453,522	18,481,013	39,664,000

[1] Included in "All other."

paper—Production in United States, 1899–1919.

[From Federal Census.]

Year.	Quantity.	Value.
	Short tons.	
	112,707	$15,895,974
	146,932	22,249,170
	198,213	29,076,638
	247,728	34,054,918
	325,183	87,740,806

e paper—Production in United States, 1917–1921.[1]

[From publications of Federal Trade Commission.]

Year.	Quantity.
	Short tons.
	288,355
	368,012
	343,762
	389,322
	242,485

bonds, ledgers, etc.

ne paper—Production by months, 1919, 1920, and 1921.

1919	1920	1921	Month.	1919	1920	1921
hort tons.	*Short tons.*	*Short tons.*		*Short tons.*	*Short tons.*	*Short tons.*
27,675	32,886	22,756	July	30,036	34,078	16,327
24,600	29,202	19,242	August	33,122	33,122	18,333
23,514	33,671	19,058	September	31,923	34,207	20,555
22,470	33,493	15,631	October	34,808	34,526	24,635
25,010	31,575	17,485	November	32,468	31,208	24,609
27,122	34,121	17,511	December	31,014	27,233	25,843

ne paper, free from wood pulp—World production, 1906–7.[1]

untry.	1906–7, quantity.	Country.	1906–7, quantity.
	Short tons.		*Short tons.*
	308,900	Holland	13,600
	187,780	Belgium	12,000
	178,650	Switzerland	7,500
	82,180	Spain	7 400
	58,343	Finland	5,020
	36,410	Denmark	4,580
	34,900	Portugal	3,570
	32,400	Rumania	1,850
	18,000		
	15,500	Total	1,008,583

Papierindustrie der Welt in Ihrer Entstehung und Heutigen Bedeutung," by Franz
lished by Imperial Royal Austrian Museum of Commerce).

Fine paper [1]—Production in Canada, 1917 and 1919.[2]

Grade.	1917		1919	
	Quantity.	Value.	Quantity.	Value.
Writing paper:	*Short tons.*		*Short tons.*	
Ontario	1,453	$273,463	4,653	$1,446,718
Quebec	5,764	1,697,893	5,577	1,770,284
Total Canada	7,217	1,971,356	10,230	3,217,002
All other fine paper:				
Ontario	50	12,252	40	17,786
Quebec	147	16,170	6,570	2,170,878
Total Canada	197	28,422	6,610	2,188,664
Total fine paper:				
Ontario	1,503	285,715	4,693	1,464,504
Quebec	5,911	1,714,063	12,147	3,941,162
Total Canada	7,414	1,999,778	16,840	5,405,666

[1] Not including rag book, map, lithograph, etc.
[2] Canadian Census of Paper Industry, 1917, p. 16.

Imports for consumption—Revenue, 1907–1921.

Year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
FINE PAPER.[1]						
Fiscal year:		*Pounds.*				*Per cent.*
1907	Specific and ad valorem.	976,817	$188,137	$60,664	$0.193	32.24
1908	do	952,306	147,292	50,421	.155	34.23
1909	do	772,152	131,876	45,914	.171	34.82
1910	do	1,234,510	158,513	62,526	.128	39.45
1911	do	1,648,555	175,722	77,777	.107	44.26
1912	do	1,724,578	176,035	79,443	.102	45.13
1913	do	1,608,821	182,439	77,508	.113	42.48
1914	Specific, ad valorem, and free.	2,163,432	203,171	57,266	.094	28.19
1915	do	1,615,486	168,080	42,013	.104	25.00
1916	25 per cent, and 25 per cent less 20 per cent.	798,695	118,907	29,721	.141	25.00
1917	25 per cent	1,062,060	203,721	50,929	.188	25.00
1918	do	450,875	162,820	40,704	.361	25.00
Calendar year:						
1918	do	405,939	182,487	45,622	.450	25.00
1919	do	532,336	340,037	85,009	.639	25.00
1920	25 per cent, and 25 per cent less 20 per cent.	927,208	520,063	130,016	.561	25.00
1921	25 per cent	1,699,290	683,141	170,785	.402	25.00

[1] Includes total of "writing, letter, note, etc." Represents sum of following statistics of imports for consumption (except envelopes).

for consumption—Revenue, 1907–1921—Continued.

te of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
OT RULED, BORDERED, EMBOSSED, LINED, PRINTED, OR DECORATED.[2]					
	Pounds.				*Per cent.*
;ific and ad ılorem.	952,016	$181,688	$58,228	$0.191	32.05
do	937,045	142,526	48,714	.152	34.18
do	754,460	126,428	43,952	.168	34.76
do	1,162,024	145,162	56,926	.125	39.22
nts per pound lus 15 per cent.	1,540,987	156,098	69,644	.101	44.62
do	1,642,829	163,028	73,739	.099	45.23
do	1,515,914	163,650	70,024	.108	42.79
do	304,508	32,423	13,998	.106	43.18
per cent	1,733,367	155,000	38,750	.089	25.00
per cent less 20 per cent.[3]	3	1		.333	
per cent	1,582,525	164,554	41,138	.104	25.00
per cent less 20 per cent.[3]	50	9	1	.180	20.00
per cent	710,812	106,524	26,631	.150	25.00
do	931,696	174,778	43,694	.188	25.00
do	381,589	128,441	34,610	.363	25.00
LED, BORDERED, EMBOSSED, LINED, PRINTED, OR DECORATED.[4]					
Specific and ad valorem.	24,801	$6,449	$2,436	$0.260	37.77
do	15,261	4,766	1,707	.312	35.82
do	17,692	5,448	1,962	.308	36.01
do	72,446	13,333	5,596	.184	41.97
3 cents per pound plus 25 per cent less 20 per cent.	40	18	4	.45	25.33
3 cents per pound plus 25 per cent.	107,568	19,624	8,133	.182	41.44
3 cents per pound plus 25 per cent.	81,749	13,007	5,704	0.159	43.85
do	92,907	18,789	7,484	.202	39.83
do	19,408	4,694	1,755	.242	37.40
25 per cent	106,139	11,053	2,763	.104	25.00
Free [5]	10	1		.10	
25 per cent	32,731	3,493	873	.107	25.00
25 per cent less 20 per cent.	7	10	2	1.43	20.00
Free [5]	220	22		.10	
25 per cent	87,826	12,359	3,089	.141	25.00
25 per cent less 20 per cent.	7	15	3	2.14	20.00
25 per cent	150,364	28,943	7,235	.192	25.00
do	69,286	24,379	6,094	.352	25.00
DRAWING PAPER.					
25 per cent	133,182	$45,130	$11,283	$0.339	25.00
do	268,154	66,481	16,620	.240	25.00
do	539,172	125,361	31,340	.238	25.00

[1] 1897 includes writing, letter, note, handmade, drawing, ledger, bond, record, tablet, and er, not ruled, bordered, embossed, printed, or decorated. Under acts of 1909 and 1913, g, letter, note, handmade, and paper commercially known as handmade and machine an and imitation japan paper, by whatever name known, and ledger, bond, record, tablet, anifold, and onionskin and imitation onionskin papers, calendered or uncalendered, all

(reciprocity treaty of 1903).

[2] 1897, includes writing, letter, note, handmade, drawing, ledger, bond, record, tablet, and per, ruled, bordered, embossed, handmade, and machine handmade, japan and imitation by whatever name known, and ledger, bond, record, tablet, typewriter, manifold and onion-skin and imitation onionskin papers, calendered or uncalendered, ruled, bordered, embossed, printed, colored in any manner.

[3] Foreign diplomatic officers.

Imports for consumption—Revenue, 1907–1921—Continued.

Year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
LEDGER BOND AND RECORD PAPER.						
Calendar year:		*Pounds.*				*Per cent.*
1919	25 per cent	9,093	$3,796	$949	$0.417	25.00
1920	do	6,697	3,733	933	.557	25.00
1921	do	6,625	3,051	763	.461	25.00
TABLET PAPER.						
Calendar year:						
1919	25 per cent	25	$10	$2	$0.40	25.00
1920	do	638	409	102	.641	25.00
1921	do	354	205	51	.579	25.00
TYPEWRITING PAPER.						
Calendar year:						
1919	25 per cent	939	$616	$154	$0.656	25.00
1920	do	1,077	446	112	.414	25.00
1921	do	390	218	55	.558	25.00
WRITING, LETTER, NOTE, HANDMADE, AND PAPER COMMERCIALLY KNOWN AS HANDMADE AND MACHINE HANDMADE, JAPAN AND IMITATION JAPAN PAPER BY WHATEVER NAME KNOWN, AND ONIONSKIN AND IMITATION ONIONSKIN PAPERS, CALENDERED OR UNCALENDERED, RULED, BORDERED, EMBOSSED, PRINTED, LINED, OR DECORATED, ETC.						
Calendar year:						
1919	25 per cent	25,152	$21,788	$5,447	$0.866	25.00
1920	do	43,163	20,370	5,093	.472	25.00
1921	do	62,354	25,588	6,397	.410	25.00
WRITING, LETTER, NOTE, HANDMADE, AND PAPER COMMERCIALLY KNOWN AS HANDMADE AND MACHINE HANDMADE, JAPAN AND IMITATION JAPAN PAPER BY WHATEVER NAME KNOWN, AND ONIONSKIN AND IMITATION ONIONSKIN PAPERS, CALENDERED OR UNCALENDERED, NOT RULED, BORDERED, EMBOSSED, PRINTED, LINED, OR DECORATED, ETC.						
Calendar year:						
1919	25 per cent	363,945	$268,697	$67,174	$0.738	25.00
1920	do	607,497	428,624	107,156	.706	25.00
1921	do	1,090,395	528,718	132,780	.485	25.00
ENVELOPES, FOLDED OR FLAT.[a]						
Fiscal year:						
1907	25 per cent and 35 per cent.	13,146	$10,720	$2,600	$0.815	24.25
1908	do	17,145	21,549	4,922	1.257	22.84
1909	do	20,752	22,751	5,521	1.096	24.27
1910	20 per cent and 35 per cent and free.	18,979	21,228	5,849	1.118	27.55
1911	20 per cent and 35 per cent.	.....	25,894	6,827	.....	26.37
1912	20 per cent and 35 per cent and free.	.....	18,653	5,145	.....	27.58
1913	20 per cent and 35 per cent.	.....	22,329	6,408	.....	28.70
1914	Ad valorem	.....	29,349	5,415	.....	17.59
1915	15 per cent	.....	14,710	2,206	.....	15.00
1916	15 per cent and 15 per cent less 20 per cent.	.....	14,902	2,234	.....	15.00
1917	15 per cent and free	.....	18,692	2,802	.....	15.00
1918	do	.....	8,790	1,307	.....	14.87
Calendar year:						
1918	15 per cent	.....	5,122	768	.....	15.00
1919	do	.....	14,291	2,144	.....	15.00
1920	15 per cent and free	.....	48,742	7,289	.....	14.95
1921	15 per cent	.....	42,586	6,388	.....	15.00

[a] Includes totals of following statistics of imports for consumption.

or consumption—Revenue, 1907–1921—Continued.

of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
OR FLAT, BORDERED, EMBOSSED, PRINTED, TINTED, DECORATED, OR LINED.					
	Pounds.				*Per cent.*
r cent	3,363	$3,041	$1,064	$0.904	35.00
o	2,484	4,090	1,431	1.650	35.00
lo	9,829	6,476	2,266	.659	35.00
lo	10,337	10,692	3,742	1.030	35.00
lo		10,993	3,847		35.00
er cent		9,445	3,305		35.00
[7]		5			
er cent		12,949	4,532		35.00
do		4,235	1,482		35.00
ENVELOPES, FOLDED OR FLAT, PLAIN.					
per cent	9,783	$7,679	$1,536	$0.785	20.00
do	14,661	17,459	3,491	1.190	20.00
do	17,923	16,275	3,255	.908	20.00
do	8,642	10,535	2,107	1.220	20.00
ree [7]		1			
per cent		14,901	2,980		20.00
do		9,203	1,840		20.00
do		9,380	1,876		20.00
do		3,358	671		20.00
ENVELOPES, FOLDED OR FLAT, N. S. P. F.					
15 per cent		$21,752	$3,262		15.00
15 per cent less 20 per cent. [10]		4	([11])		12.00
15 per cent		14,710	2,206		15.00
do		14,899	2,234		15.00
15 per cent less 20 per cent. [10]		3	([12])		12.00
15 per cent		18,682	2,802		15.00
Free [13]		10			
15 per cent		8,717	1,307		15.00
Free [13]		73			
15 per cent		5,122	768		15.00
do		14,291	2,144		15.00
15 per cent		48,590	7,289		15.00
Free		152			
15 per cent		42,586	6,388		15.00

eign diplomatic officers.
. 3, 1913.
o June 30, 1914.
reciprocity treaty, Dec. 27, 1903).

pine Islands (act of Oct. 3, 1913).

Writing paper and envelopes—Domestic exports, 1910–1921.

FISCAL YEARS.

Exported to—	1910	1911	1912	1913	1914	1915	1916	1917	1918
France	$12,040	$10,564	$6,954	$9,470	$8,681	$6,415	$20,719	$97,276	$60,183
Greece	355	853	1,129	494	1,139	3,805	8,202	88,926	.....
Russia in Europe	1,409	1,546	1,596	1,350	2,073	9,214	2,518	8,689	64,617
United Kingdom	140,188	38,692	70,075	52,572	44,574	90,167	180,780	188,578	73,720
Canada	275,227	323,215	374,839	550,624	427,545	300,068	318,250	364,369	448,306
Panama	42,497	39,581	28,192	36,629	41,725	36,137	48,061	76,314	90,177
Mexico	181,765	153,005	111,268	121,205	55,807	64,828	98,574	161,745	379,426
Cuba	123,973	117,319	111,363	115,557	114,775	131,683	195,865	340,166	499,557
Dominican Republic	8,921	14,022	15,279	12,900	13,266	9,791	21,627	35,979	63,347
Argentina	35,553	18,043	31,415	45,032	18,884	18,342	46,642	201,040	208,851
Brazil	19,804	26,801	20,765	19,304	22,709	18,503	51,438	202,245	391,086
Chile	11,424	46,932	46,531	12,228	6,968	4,206	11,320	65,637	200,034
Colombia	9,536	13,302	12,807	14,738	27,979	17,372	40,340	78,544	78,145
Peru	15,378	16,494	12,859	20,382	16,068	18,333	18,458	75,638	103,813
Uruguay	4,180	2,694	4,258	3,104	3,676	2,185	4,435	39,212	51,799
Venezuela	8,508	9,279	11,922	11,899	11,682	10,279	19,964	58,721	79,299
British India	7,571	9,693	17,173	14,627	17,123	17,303	42,687	67,028	246,144
Japan	30,962	9,627	3,313	6,843	11,919	10,483	23,302	34,488	57,343
Australia	83,813	71,146	61,868	56,596	75,295	67,798	88,734	154,961	511,140
New Zealand	12,193	11,567	8,472	10,526	13,621	9,399	29,728	61,209	96,095
Philippine Islands	105,727	129,872	111,169	79,860	64,980	95,307	107,287	251,304	181,537
British South Africa	4,714	5,786	5,756	10,789	5,775	8,256	17,553	76,679	233,682
All other countries	131,379	178,330	123,420	144,497	172,968	148,323	413,657	406,291	441,563
Total	1,267,117	1,200,168	1,192,423	1,351,226	1,179,232	1,098,197	1,588,756	3,135,039	7,560,084

CALENDAR YEARS.

Exported to—	1918	1919	1920	1921
France	$91,072	$148,989	$56,260	$11,032
Greece	80,535	638,505	138,389	15,517
Russia in Europe	545	4,970	149	2,490
United Kingdom	63,304	328,595	352,165	92,554
Canada	482,067	428,867	533,667	319,743
Panama	87,974	100,375	135,344	129,442
Mexico	303,730	675,552	589,887	452,192
Cuba	587,780	725,438	922,523	515,216
Dominican Republic	62,941	75,811	172,900	85,576
Argentina	408,771	1,155,000	727,078	235,302
Brazil	479,647	1,651,178	634,100	145,324
Chile	230,544	304,989	211,281	62,074
Colombia	89,744	175,932	273,081	100,736
Peru	121,341	181,735	213,458	92,612
Uruguay	26,808	169,669	98,963	22,125
Venezuela	64,252	114,473	152,704	45,391
China	71,064	357,576	420,190	200,328
British India	335,401	334,921	474,759	129,872
Dutch East Indies	163,509	211,351	197,335	184,542
Japan	167,028	649,729	136,196	61,319
Australia	901,288	2,082,728	309,141	95,670
New Zealand	275,051	480,351	110,990	53,817
Philippine Islands	197,595	516,232	699,956	619,152
British South Africa	352,813	502,763	183,431	130,904
All other countries	468,680	1,172,436	1,164,283	552,712
Total	6,113,498	13,188,165	8,908,230	4,355,642

Fine paper—Wholesale minimum price or range of prices, in cents per pound, f. o. b. mill for available date nearest 15th of month—New York market, 1910–1922.

[From Paper Trade Journal.]

Kind or grade.	1910				1911			
	January.	April.	July.	October.	January.	April.	July.	October.
Bond	6 –40	6 –40	6 –40	6–40	6–40	6–40	6–40	6–40
Ledger	6½–20	6½–20	6½–20	9–20	9–20	9–20	9–20	9–20
Writing:								
Extra superfine	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Superfine	11	11	11	11	11	11	11	11
Tub sized	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Engine sized	6	6	6	6	6	6	6	6

[1] Figures not available.

e minimun price or range of prices, in cents per pound, f. o. b. lata nearest 15th of month—New York market, 1910–1922—Con.

1912				1913			
uary.	April.	July.	October.	January.	April.	July.	October.
6–40	6–40	5½–40	5½–55	5½–55	6–24	6–24	6–24
9–20	9–20	6 –24	6 –35	6 –35	8–30	8–30	8–30
(1)	(1)	12	12	12	13½	13½	13½
11	11	11	11	11	11	11	11
(1)	(1)	(1)	(1)	(1)	(1)	(1)	8
5	5	4½	4½	4½	4½	4½	4½

1914				1915			
anuary.	April.	July.	October.	January.	April.	July.	October.
5–24	5–24	5–24	5–24	5–24	5–24	5–24	5–24
5–25	5–25	5–25	5–25	5–25	5–25	5–25	5–25
13½	13½	13½	13½	13½	13½	13½	13½
11	11	11	11	11	11	11	11
8	8	8	8	8	8	8	8
4½	4½	4½	4½	4½	4½	4½	4½

	1916				1917			
	January.	April.	July.	October.	January.	April.	July.	October.
..	5–24½	7½	7½	12	12	11	11	10
..	5–25	8	8	13	12	11½	11½	10
..	13½	17	20	21	21	21	21	21
..	11	15	19	19	19	19	19	19
..	8	12	12	13	13	13	13	13
..	4½	8	8	11	11	9	9	9

	1918				1919			
	January.	April.	July.	October.	January.	April.	July.	October.
....	10	14	14–38	15–40	15–41	12–41	11–41	11–41
....	10	12	14–32	14–36	14–36	14–36	13–36	13–36
ne..	21	21	21	21	21	20	19	20
.....	19	19	19	19	19	19	19	19
.....	13	14	14	14	14	14	14	14
.....	9	10	10	12	12	12	12	12

le.	1920				1921				1922			
	Jan.	Apr.	July.	Oct.	Jan.	Apr.	July.	Oct.	Jan.	Apr.	July.	Sept.[2]
.....	11–41	13–45	19–66	19–66	15½–66	10	9	9	9	8½	8½	.....
.....	13–36	16–44	18–48	18–48	18 –48	12	12	12	10½	10½	10½	.....
rfine..	20	22	28	28	28	14	14	13	14	14	14	.....
.....	19	20	22	22	22	14	14	13	13	13	13	.....
.....	14	15	17	17	17	12	14	13	10	10	10	.....
ed.....	12	13	15	15	15	9	12	9	9	9	9	.....

[1] Figures not available.

[2] Quotations withdrawn.

Fine paper and envelopes—Rates of duty, 1883–1913.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1883....	392	* * * demy, drawing, elephant, foolscap, imperial, letter, note, and all other paper not specially enumerated or provided for in this act.	25 per cent ad valorem.
	391	Paper envelopes	Do.
1890....	422	* * * writing paper, drawing-paper, and all other paper not specially provided for in this Act.	Do.
	421	Paper envelopes	25 cents per thousand.
1894....	310	* * * writing paper, drawing paper, and all other paper not specially provided for in this act.	20 per cent ad valorem.
	307	* * * writing paper and envelopes, embossed, engraved, printed or ornamented.	30 per cent ad valorem.
	309	Paper envelopes	20 per cent ad valorem.
1897....	401	Writing, letter, note, hand-made, drawing, ledger, bond, record, tablet, and typewriter paper, weighing not less than 10 pounds and not more than 15 pounds to the ream.	2 cents per pound and 10 per cent ad valorem.
		Weighing more than 15 pounds to the ream	3½ cents per pound and 15 per cent ad valorem.
		But if any such paper is ruled, bordered, embossed, printed, or decorated in any manner, it shall pay 10 per cent ad valorem in addition to the foregoing rates. *Provided*, That in computing the duty on such paper every 180,000 square inches shall be taken to be a ream.	10 per cent ad valorem additional.
	399	Paper envelopes, plain	20 per cent ad valorem.
		If bordered, embossed, printed, tinted, or decorated	35 per cent ad valorem.
1909....	413	Writing, letter, note, handmade paper and paper commercially known as handmade paper and machine handmade paper, japan paper, and imitation japan paper by whatever name known, and ledger, bond, record, tablet, typewriter, manifold, and onionskin and imitation onionskin papers, calendered or uncalendered, weighing 6½ pounds or over per ream.	3 cents per pound and 15 per cent ad valorem.
		But if any such paper is ruled, bordered, embossed, printed, lined, or decorated in any manner, other than by lithographic process, it shall pay 10 per centum ad valorem in addition to the foregoing rates: *Provided*, That in computing the duty on such paper every 180,000 square inches shall be taken to be a ream.	10 per cent ad valorem additional.
	414	Paper envelopes not specially provided for in this section, folded or flat, if plain.	20 per cent ad valorem.
		If bordered, embossed, printed, tinted, decorated, or lined	35 per cent ad valorem.
1913....	326	Writing, letter, note, drawing, handmade paper and paper commercially known as handmade paper and machine handmade paper, japan paper and imitation japan paper by whatever name known, and ledger, bond, record, tablet, typewriter, and onionskin and imitation onionskin papers, calendered or uncalendered, whether or not any such paper is ruled, bordered, embossed, printed, lined, or decorated in any manner.	25 per cent ad valorem.
	327	Paper envelopes, folded or flat, not specially provided for in this section.	15 per cent ad valorem.

Court and Treasury Decisions.

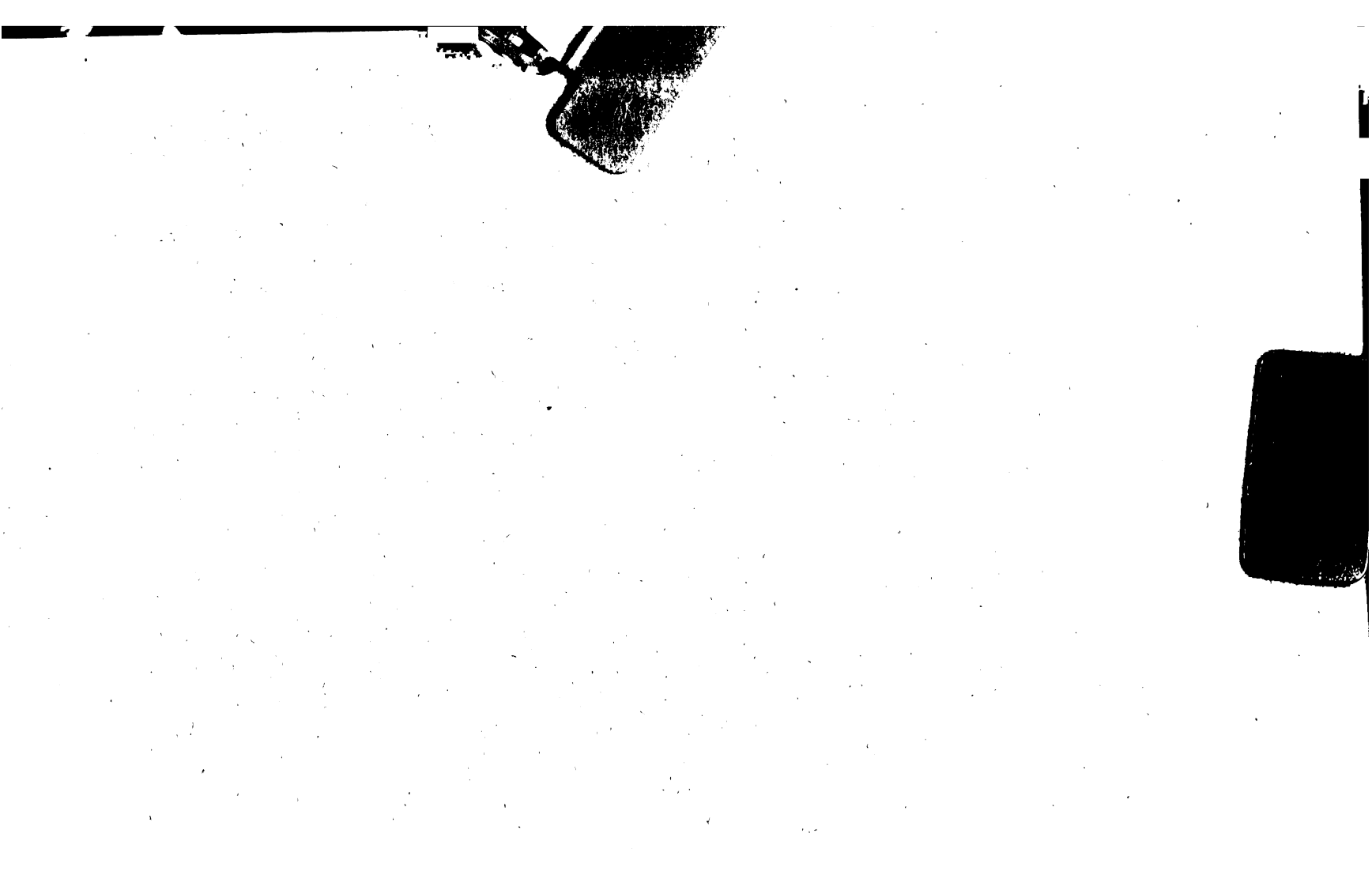
The provision in paragraph 401 of the act of 1897 for handmade paper was held not restricted to paper ejusdem generis with the writing, letter, and other papers enumerated in that paragraph; and handmade surface-coated paper was declared more specially provided for thereunder than under the provision in paragraph 398 for surface-coated paper not specially provided for. (United States *v.* Seyd, 158 Fed. 408.) The handmade papers covered by that paragraph and act were held not limited to the class of paper used for writing and drawing purposes, but applicable as well to printing and other papers when handmade and include transfer paper used for making lithographic transfers and not printed. (Benneche *v.* United States, 153 Fed. 861; G. A. 6581, T. D. 28128.) The word "handmade" as applied to paper was declared precise, explicit, specific, and controlling, and handmade paper weighing 10 pounds to the ream was held dutiable under paragraph 401 of the act of 1897. (American Trading Co. *v.* United States, 2 Ct. Cust. Appls. 237.)

flat envelopes and held that they were entitled to entry at 20 per cent ad valorem.

The rare and exceptional use of onionskin for printing purposes does not construct it printing paper, and it was held to be dutiable as paper not specially provided for under paragraph 402 of the act of 1913. (Kahlen *v.* United States, 2 Ct. Cust. Appls. 206.) The fact that a paper can be printed on is not alone sufficient to warrant its classification as printing paper. (G. A. 6521, T. D. 27848.)

Grease-proof paper, chiefly used for wrapping lard and other oleaginous substances, was held dutiable under paragraph 411 of the act of 1909, and not as onionskin paper under paragraph 413. (T. D. 32152.)

○



UNITED STATES TARIFF COMMISSION
WASHINGTON

TARIFF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPH 324 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

SURFACE-COATED, PHOTOGRAPHIC, CIGARETTE AND MISCELLANEOUS PAPERS

Paragraph 324:
- Surface-coated paper.
- Gummed paper.
- Decorated paper.
- Cloth-lined or reinforced paper.
- Photographic paper.
- Bags, envelopes, etc., of surface-coated paper, etc.
- Boxes, of paper, etc., covered with surface-coated paper, etc.
- Parchment paper and imitation parchment paper (for treatment see Par. 323).

Paragraph 332:
- Paper or cardboard, cut, die-cut, etc.
- Paper and manufactures of paper, n. s. p. f.

Paragraph 369:
- Papier-mâché.

Paragraph 381:
- Cigarette paper.

Paragraph 566:
- Paper stock.

Paragraph 567:
- Decalcomania paper.

Unnamed in Act of 1913:
- Waxed paper.

REVISED EDITION

WASHINGTON
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1922

M-4

UNITED STATES TARIFF COMMISSION,
Office: Eighth and E Streets NW., Washington, D. C.

COMMISSIONERS.

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JOHN P. BETHUNE, Secretary.

PREFACE.

This is one of a series of Tariff Information Surveys prepared by ıe United States Tariff Commission and transmitted to the Com-ıittee on Ways and Means. The series covers all of the articles nd commodities provided for in the tariff act of October 3, 1913, ınd others not specifically provided for. It is arranged in the ıumerical order of paragraphs of that act.

In some cases two or more paragraphs have been combined in ɔne pamphlet. In doing this, industrial relationship of the articles has been followed when possible. In those instances where a paragraph has been treated under a preceding paragraph of the tariff act, reference is made to this fact at the point where the paragraph appears in numerical order. Where one grade of an article is dutiable and another grade of the same article is on the free list, the article is discussed under the dutiable paragraph, which appears first in numerical order in the tariff act. In certain instances articles of close industrial relationship and which occur in separate paragraphs of the tariff act have been combined under one paragraph for convenience of discussion. Reference is made to this fact at the point where the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and index," which contains:

1. An introductory chapter discussing the scope of the series and the general method of treatment.
2. An alphabetical index of the articles provided for in the tariff act of 1913, showing the paragraph of the act in which the article is provided for and, if discussed under a different paragraph, the number of such paragraph.
3. A list of the pamphlets in the series, showing the paragraphs and articles included in each pamphlet.

Thus by use of this "Introduction and index," the exact location of the discussion relating to a given article or commodity can be ascertained.

In the preparation of this report the Tariff Commission had the services of Constant Southworth, special expert of the commission's staff, and of others.

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SURFACE-COATED, WAXED, GUMMED, DECALCOMANIA AND DECORATED PAPER.

General Information.

ACT OF 1913.

Paragraph 324: Papers wholly or partly covered with metal leaf or with gelatin or flock, papers with white coated surface or surfaces, calendar plate finished, hand-dipped marbleized paper, * * * and lithographic transfer paper not printed, 25 per centum ad valorem; papers with coated surface or surfaces suitable for covering boxes, not specially provided for, whether or not embossed or printed except by lithographic process, 40 per centum ad valorem; all other paper with coated surface or surfaces not specially provided for in this section; uncoated papers, gummed, or with the surface or surfaces wholly or partly decorated or covered with a design, fancy effect, pattern, or character, whether produced in the pulp or otherwise except by lithographic process, * * * 35 per centum ad valorem; * * *.

Paragraph 567: * * *' decalcomania paper not printed (free).

DESCRIPTION.

Surface-coated paper, as the name implies, is paper with one or both surfaces coated. A large proportion of that made in the United States is coated with clay. There are also some coatings with a metal base and others made of gelatin and other products.

Surface-coated paper, or coated paper as it will be hereinafter designated, is made in a great variety of grades and colors. This is true of the imported as well as of the domestic paper.

Coated book paper, used for printing illustrations and other printing purposes, is an important kind of coated paper. The base, a good grade of book paper, is usually coated on both sides.

Other kinds of coated paper are used mainly for covering boxes and for other fancy or decorative purposes. They are usually known as supercalendered, flint-glazed, friction-glazed, plated, embossed, waterproof, and fancy papers.

The 1913 tariff act names a number of kinds of coated paper according to the material or color of the coating, without specifically providing for coated book paper. The descriptions are so detailed as to require little explanation or elaboration. Flock, referred to in the first item of paragraph 324, is a coating substance made of finely ground wool, felt, or vegetable fiber. The term "calendar plate-finished" paper is a misnomer. The paper referred to is probably made by pressing between sheets of metal, with or without a cloth or other material to impart a design. Marbleized paper derives its name from the fact that it is coated to resemble the surface of a marble slab. Lithographic transfer paper not printed is a coated paper used in lithography for transferring designs to lithographic plates.

Such paper, when containing the imprints taken from lithographic plates, is provided for separately in paragraph 137. (See Tariff Information Survey C–15, p. 54.)

Gummed paper, used in making such articles as stickers, labels, stamps, and seals, is a kind of coated paper, in that it has one surface covered with glue or gum.

Decalcomania paper for transferring colored designs to glassware, porcelain, marble, and the like, is also a coated paper. It is covered with a vegetable gum or alumina coating, on which the design in colors is placed. The transfer of the design to the surface of the glassware or other article is effected by soaking the paper in water and then pressing it against the article to be decorated. The design readily adheres to the surface against which it is pressed, and the paper is easily torn off.

Waxed paper, another variety of coated paper, is not separately provided for in the act of 1913. It is used for wrapping and preserving bread, cake, and other bakery and food products, as well as for drugs, flowers, and other articles.

DOMESTIC PRODUCTION.

MATERIALS.

Machine-finish book paper, ordinarily made of chemical wood pulp, or a mixture of chemical wood pulp and rag pulp, is most used as a base for coated book paper; considerable amounts of groundwood, manila, and jute paper are also used in making other kinds of coated paper.

Clay, casein, and colors are the other ingredients of most importance. English china clay is much used for coating; most manufacturers consider it superior to the domestic clay for that purpose.

The following table shows in detail the materials other than paper used in making coated paper, together with the principal countries from which they are obtained:

Clay	England.	Oils	United States.
Casein	United States, Argentina, France.	Shellac	India.
		Carnauba wax	Brazil.
Pulp colors	United States, Germany.	Stearic acid	United States.
Aniline dyes	United States.	Talc	Do.
Earth colors	Do.	Ceresin	United States, Austria.
Ammonia	Do.	Soap	United States.
Blanc fixe	Do.	Satin white	Do.
Borax	Do.	Paris white	Do.
Glue	Do.		

In making waxed or paraffin paper a variety of raw paper is used, ranging in weight from tissue paper to a fairly heavy grade, and in material from all ground wood to part rag. Rag paper is usually too expensive, however, to use for this purpose, ground wood and sulphite wood pulp being principally used. Most of the paraffin is secured in the United States; the best grades are imported. In 1920, 2,350 tons of paraffin, valued at $502,500, were imported by 19 members of the Waxed Paper Manufacturers' Association. This wax came principally from Borneo and India. It is preferred because its melting point is higher than that of domestic wax, because of its general superiority and its lower cost.

In making gummed paper, a wood pulp paper, almost invariably of domestic origin, is usually used as a base. Kraft, book, writing, glassine, and manila papers are used, as well as tissue and coated papers and certain papers especially sized and prepared for the purpose. The weights range ordinarily from medium to heavy. Papers for gumming usually weigh not over 35 pounds per ream of 500 sheets 17 by 22 inches. For making strong, heavy gummed paper, however, kraft paper up to 100 pounds per ream is often used.

The adhesive applied to the raw paper is usually animal glue (made of bones and hides) obtained as a by-product from the packing industry. Fish glue, dextrine, envelope gum, and gum arabic also serve as adhesives as well as small amounts of glucose, glycerin, starch, and sugar.

In the manufacture of decalcomania paper, unsized book paper, starch, flour, and gum are used.

EQUIPMENT.

Machinery used in the United States for coating paper is produced principally in this country, but some of it comes from Germany. Some coating-paper manufacturers consider the German machines more efficient and up to date, and there is little question that they are cheaper. However, other manufacturers find the American machines satisfactory.

The machinery used in making waxed, gummed, and decalcomania paper is manufactured almost entirely in the United States. A very small amount of machinery for gumming is imported from Germany. A prominent American manufacturer of gummed paper states that the foreign gumming machines are inferior in quality to the American and that they are less efficient.

METHODS OF PRODUCTION.

Coated paper.—In making coated paper the coloring matter, china clay, casein, glue, and whatever other materials are used are thoroughly mixed. The clay constitutes the body of the coating material, while the casein and the glue bind it together and cause it to adhere to the paper. The mixture is conveyed to the coating machines, which apply it to the paper on one or both sides by means of rolls or brushes and distribute it evenly by means of reciprocating brushes. The paper, gathered in festoons, then moves slowly for a long distance through a hot air blast. After this process, it is dry and rolled up. It then has a rather rough, dull surface, and is ordinarily finished by one of the following methods:

(1) Running it through a set of alternate steel and cotton rolls, the surface speed of every roll being the same; this is known as supercalendering.

(2) Running it between a steel roll and a cotton roll, the surface speed of the steel roll being considerably greater than that of the cotton roll; this is known as friction calendering. The product is called friction-glazed paper.

(3) Rubbing it mechanically with a flint stone; this is known as flinting. The product is called flint-glazed paper.

(4) Pressing it mechanically between sheets of metal with or without a cloth or other material to impart design; this is known as plating. The product is called plated paper.

There are also certain other finishes such as enameled or brush, imparted by cylinder brushes, and waterproof or leather, imparted by giving an extra coating of shellac.

Many of the papers finished in the various ways described are subsequently embossed by being passed under pressure between engraved rolls or cylinders. They are also frequently imprinted with designs from engraved rolls by the use of a printing machine similar to the machines used in producing cotton calico prints.

After the paper is finished by any of the processes described it is then ready to be cut up into sheets and sorted to remove imperfections or to be shipped in rolls of standard size.

Waxed paper.—The process of waxing paper is simpler than that of coating. The wax is heated and the paper unreeling from rolls is passed through it. If only one side is to be waxed, the wax is applied with two rollers in contact with each other, one touching one side of the paper and the other revolving partially submerged in the melted wax. The drying, or rather hardening, is accomplished by running the paper over cold rollers (where only one side of the paper is waxed) or by passing it through a cold blast or cold water. In the latter case, the adhering water is rubbed off by means of rollers. The paper is then rolled up and cut and trimmed into the proper sizes.

Gummed paper.—The glue is dissolved in water and the solution placed in the trough of the gumming machine. The paper, unreeling from rolls, passes through the machine. The process of applying the glue is the same as that of waxing paper on one side only. The glue is applied by means of rollers. One revolves partially submerged in the trough of glue. Another, in contact with it, takes the glue off and applies it to the paper. The paper is dried by passing it through hot air in a closed-in chamber, by passing it around hot rolls, or by some similar method. It is then rolled up, cut, and trimmed.

Decalcomania paper.—Because the function of this paper is to serve as a medium for transferring designs to glassware, porcelain, marble, and the like, it must have a surface firm enough to take the design but which readily breaks up when the printed side is pressed against the object intended to receive the design. To produce such a surface, one side of the paper is coated with starch, flour, and gum separately or mixed. For instance, a paper may first be dusted over with dry starch or coated with starch paste and dried. Then a layer of dextrin may be put over the starch coating and the design printed upon the dextrin surface. Different coating materials are used, according to the class of work in hand, but the principle of an easily detached surface coating is the same for all.

The finished decalcomania, made by printing designs on the coated paper, is turned face downward on the sticky surface of the article to be decorated. It is moistened either before or after this process. The design adheres to the new surface; the paper is easily pulled off, because the starch layer between it and the dextrin is non-adhesive.

ORGANIZATION AND GEOGRAPHIC DISTRIBUTION.

The coated-paper industry embraces some 50 or more companies, 18 of which constitute the Glazed and Fancy Paper Manufacturers' Association. The Waxed Paper Manufacturers' Association consists of 22 members, who produce 85 per cent of the waxed-paper output of the country. There are only about 15 companies manufacturing gummed paper.

The various kinds of coated paper, as in the case of the unconverted "raw" paper, are made principally in the northeastern section of the United States. Massachusetts, New York, Michigan, Rhode Island, and Pennsylvania are the most important manufacturing States. Ohio, Indiana, New Jersey, West Virginia, Virginia, New Hampshire, Connecticut, Maine, and Vermont also contain factories.

Ohio, Michigan, New Jersey, and New York are the principal seats of the waxed-paper industry. New Hampshire, Massachusetts, Illinois, Vermont, Missouri, California, and Wisconsin each contain one or two factories.

Massachusetts, New York, Ohio, New Hampshire, Vermont, and New Jersey contain gummed-paper mills.

DOMESTIC PRODUCTION AND CONSUMPTION.

Coated paper.—The following table shows the amount and value of the 1920 production of the kinds of paper in question by 15 of the 18 concerns constituting the Glazed and Fancy Paper Manufacturers' Association. The classifications follow the wording of the tariff act of 1909. It must be remembered that these figures represent only a small part of the total output of coated paper.

Class of paper.	Companies reporting.	Production during 1920.	Shipments during 1920.		
			Quantity.	Value.	Average value per pound.
	Number.	*Tons.*	*Tons.*		*Cents.*
1. Papers with white coated surface or surfaces (calender plate finish)	15	4,719	4,762	$1,787,064	18.7
2. Papers with coated surface or surfaces suitable for covering boxes, n. s. p. f.	15	11,275	10,081	4,251,846	21.1
3. Papers uncoated, printed, or decorated, etc., and cloth-lined papers	15	1,361	1,318	1,109,616	23.2

In 1920 these 15 companies employed an average of 991 males and 237 females, exclusive of office and selling force.

In the years 1914 and 1919, according to the United States census, the production of coated book paper was 117,342 tons, valued at $11,605,584, and 132,000 tons, valued at $24,010,000, respectively.

Other kinds.—The production of the 22 companies representing the Waxed Paper Manufacturers' Association was 46,880 tons, valued at $17,152,601; this was approximately 85 per cent of the total waxed paper made in the United States during the 12 months ended January, 1921.

No statistics for the production of gummed paper are available.

The annual output of decalcomania paper is estimated at 100 ton valued at $80,000. As the imports of decalcomania paper in 19 were valued at $186,000, it is evident that domestic productio provides only a small fraction of domestic consumption. The indu try is a new one in this country, having been carried on only sinc 1916. Manufacturers of decalcomania paper estimate domest consumption at 600 tons annually. This is probably an overstat ment, however, for in 1920 the value of the imports was only a litt more than twice the value of domestic production.

Domestic production of the other kinds of paper in question supplie practically the whole demand for home consumption.

DOMESTIC EXPORTS.

Information relative to exports of coated paper is not available. table in the statistical part of this section shows exports of waxe paper by countries, from 1918 to 1921, in terms of value only. Th totals exported were $228,137 in 1918, $552,167 in 1919, $403,81 in 1920, and $133,134 in 1921. Argentina, Canada, China, Cuba Australia, and the Philippine Islands were the principal recipients o this paper. Exports of gummed paper appear to be almost negligibl in quantity. One large manufacturer in 1920 exported 295 ream out of a total production of 31,445 reams to Great Britain, Denmark Australasia, and South America.

IMPORTS.

The imports for consumption of the different kinds of coated paper as specified in the tariff acts of 1897, 1909, and 1913, are shown in appended tables. In recent years the total imports of coated paper have been of small importance. In the last four years the kind imported in greatest quantity has been coated paper, n. s. p. f. During the first three years of the operation of the act of 1913 (the fiscal years 1914 to 1916) coated paper suitable for covering boxes was imported in quantities greatly exceeding the imports of any other kind of coated paper.

The table of imports by countries summarizes importations of all kinds of coated paper. From 1910 to 1915 imports ranged from 4,500,000 to 7,000,000 pounds per year. After 1915 they dropped suddenly and continued to decline to 134,418 pounds in the calendar year 1919. In the calendar year 1920 imports increased to 914,124 pounds, and in 1921 they amounted to 751,061 pounds.

Because of the lack of complete production figures, it is impossible to state the ratio of imports to production. It may be pointed out, however, that in 1914, when imports of coated paper were the greatest of any year during the last decade, namely, 3,500 tons, the production of coated book paper alone was 117,342 tons. In the fiscal year 1921 the productive capacity of the domestic coated paper industry was certainly larger than in 1914, yet imports amounted to less than 600 tons. It is therefore apparent that importations of coated paper represent an extremely small percentage of domestic production.

Before the war Germany, Belgium, and the United Kingdom, in the order named, were the greatest exporters of coated paper to the United States. In the calendar years 1918 and 1919 France, Sweden,

ınd the Netherlands were our principal sources; in 1920 Germany ıad again resumed first place on our import trade in coated paper, ıending us more than half of our total imports in that year.

No separate figures are obtainable for imports of waxed paper. ıccording to manufactures, imports come principally from Germaany, England, Sweden, Canada, and Austria.

Imports of gummed paper can not be separated from those of ecorated paper. Imports of "papers, uncoated, gummed, or with ıe surface decorated or covered with a design, fancy effect, pattern, r character, whether produced in the pulp or otherwise, except y lithographic process," shown in a table at the end of this survey, ınged from a little below 200,000 pounds to about 350,000 annually om 1914 to 1918, except in 1917, when they fell to 57,328 pounds. fter 1918 imports of these kinds of paper almost ceased. In the lendar year 1920 they amounted to 29,641 pounds and in 1921 to),735 pounds. Manufacturers say that imports of gummed paper me principally from Great Britain and Germany, but that the gregate is small.

Tables in the statistical section of this survey show the value of ports for consumption of decalcomania paper from 1914 to 1921 d of imports by countries from 1918 to 1921. The value of the mer increased from $36,302 in the fiscal year 1914 to $185,579 in) calendar year 1920 and to $184,586 in 1921. In 1918 and 1919 ıctically all these imports came from England; Canada sent the ıainder, an insignificant amount. In 1920, Germany sent us alcomania paper valued at $17,610, and France, Austria, and ıada negligible amounts. England retained undisputed lead h $165,130.

PRICES.

he wholesale mill prices of standard grades of coated paper in 1914, and in July 1917–1921 are given in the following table:[1]

Grade.	Per ream of 480 sheets 20 by 24 inches.[2]				
	1914	1917	1918	1920	1921
glazed (low grade) on groundwood paper	$1.25	$1.75	$2.10	$5.00	$2.00
glazed (better grade) on free-from-groundwood paper	1.80	2.50	2.75	6.50	2.85
glazed US No. 13	1.75	2.40	2.75	5.75	2.90
ızed US No. 19	2.10	4.00	4.50	6.50	3.85
lazed US No. 30	2.10	3.25	3.50	6.50	4.00
itho (medium grade) clay coating on free-from-ground-stock, per pound	.05½	.08	.09½	.21½	.10½

res furnished by the Nashua Gummed & Coated Paper Co.
pt white litho, which is per pound.

will be noted that between July 1, 1914, and July 1, 1918, the on the quoted grades in most instances nearly doubled. One more than doubled in price. Between July 1, 1918, and July 0, four of these grades more than doubled their prices, and the of the others greatly increased. A rapid decline took place latter part of 1920. On July 1, 1921, prices again stood at ximately their 1918 levels.

It is interesting to compare the average values of the coated paper made in 1920 by 15 members of the Glazed & Fancy Paper Manufacturers Association with the average values of the same kinds of paper imported in that year. The following table, compiled from figures furnished by the above association and from United States import statistics, presents this comparison:

Grade.	Average price of domestic output of 15 companies in 1920.	Average price of imports in 1920.
	Cents per pound.	*Cents per pound.*
Paper with white coated surface or surfaces, calender plate finish	18.7	45.0
Paper with coated surface or surfaces suitable for covering boxes, n. s. p. f.	21.1	17.4
Paper uncoated, printed, or decorated, etc., and cloth-lined paper	21.2	.....
Paper, uncoated, gummed, or decorated, etc	.....	47.3

It will be noted that imports of white coated paper, calender plate finish, averaged two and one-half times the value per pound of the domestic output of the 15 concerns reporting. The price of imported coated paper suitable for covering boxes was slightly less than the price of the domestic paper of the same kind. As the price of domestic uncoated decorated papers includes cloth-lined paper but not gummed paper, and the price of the imported uncoated decorated papers includes gummed paper but not cloth-lined paper, the two can not be directly compared. The imported grade in 1920 averaged twice the price of the domestic grade.

In all these comparisons it must be borne in mind that the grades of paper in question vary so greatly that the comparison of any two independent sets of prices is often misleading.

The average market value of the waxed paper produced in the 12 months ended January, 1921, by the members of the Waxed Paper Manufacturers' Association, was 18.3 cents per pound.

There is no definitely standardized grading of gummed paper; each manufacturer has his own grades. The following table of the selling prices was compiled from figures furnished by two large manufacturers of gummed paper. The quotations are for certain of their more important grades in July of the several years from 1914 to 1921. The actual sales prices per ream of varying weights are shown, as well as the prices per pound, calculated by a reduction of the ream prices.

July—	Nos. 104 and 700 in reams of 500 sheets, 17 by 22 inches, weighing 22 pounds per ream.[1]		No. 1, in reams of 500 sheets, 20 by 25 inches, weighing 31 pounds per ream.[2]	
	Per ream.	*Per pound.*	*Per ream.*	*Per pound.*
1914	$2.10	$0.095	$6.75	$0.218
1915	.....	.....	6.75	.218
1916	2.85	.130	7.00	.226
1917	.....	.....	8.25	.266
1918	3.50	.159	8.25	.266
1919	.....	.....	10.50	.339
1920	5.75	.261	10.50	.339
1921	4.00	.182	14.00	.452

[1] Furnished by Samuel Jones & Co., Newark, N. J.
[2] Furnished by Dennison Manufacturing Co., Framingham, Mass.

It will be noted that the price on No. 1 gummed paper, furnished by the Dennison Manufacturing Co., instead of being greatly reduced between July of 1920 and July of 1921, as was the case with the other gummed papers quoted and with practically all other kinds of paper, was much higher in July of 1921 than in July of any preceding year. It is probable that special conditions of demand for this particular grade of gummed paper in general account for this phenomenon.

The following are the ream and pound prices in July of 1918, 1920, and 1921 on No. 60 decalcomania paper produced by Samuel Jones & Co.

July—	Per ream of 500 sheets, 17 by 22 inches, weighing 27 pounds.	Per pound.
.....	$7.00	$0.259
.....	9.00	.333
.....	8.00	.296

TARIFF HISTORY.

The act of 1890 was the first tariff act to name coated paper separately. It imposed a duty of 35 per cent on all coated paper. The act of 1894 lowered the rate to 30 per cent. The act of 1897 separated paper covered with metal, gelatin, or flock from other coated paper, imposing a combined ad valorem and specific duty on each kind, the higher rate being on the specially treated paper. The 1909 act refined the 1897 classification; except that it imposed a higher duty separately on metal-coated paper beneath a certain weight, and also introduced a provision for decorated papers, specifically including decorated wrapping paper. The 1909 duties were specific and combined specific and ad valorem rates. The act of 1913 specially provides for a considerable variety of coated papers, bearing ad valorem duties ranging from 25 to 40 per cent. The 1909 item for coated papers was changed to include specifically uncoated papers. Enamed papers were also introduced into this item. Decalcomania paper was first named in the act of 1913. It was put on the free list.

COMPETITIVE CONDITIONS.

COATED PAPER.

As has been pointed out, imports of coated paper apparently constitute an insignificant proportion of domestic production. Judging from the foregoing comparison of prices of the domestic product with those of imported coated paper in 1920, and also from the small amount of importations, it may be assumed that the imported product is ordinarily in the nature of a specialty and costs more than the domestic product. With an average price as high as recently prevailing on imported coated paper, it hardly seems likely that foreign competition would be keenly felt outside of the finer grades.

Some manufacturers state that immediately following the passage of the act of 1913, the Germans and others dumped coated paper into this country at prices which in many cases caused partial shutdowns in the domestic industry. War conditions cut off foreign competition from 1914 to 1920, but now that trade has been resumed manufacturers again express fear of European dumping. As a matter of fact, however, the general trade depression just prior to the war was the most important cause of the shutdowns in 1913 and 1914. It is difficult to isolate the effect of the lowered tariff in contributing to this depression. Practically all of the coated paper imported from the time the act of 1913 took effect (October 4, 1913) to June 30, 1914, was dutiable at the highest rate specified on paper—40 per cent. This duty was not much lower than the average ad valorem equivalent duty collected on coated paper imports from July 1 to October 3, 1913, under the act of 1909. This average ad valorem equivalent duty was 47½ per cent.

WAXED, GUMMED, AND DECALCOMANIA PAPER.

The waxed-paper industry of the United States is confronted with practically no foreign competition, though in certain quarters fear is expressed regarding the development of the industry in Canada. The gummed-paper industry also is practically independent of foreign competition, imports being practically negligible.

The manufacturers of decalcomania paper, however, are in the position of an infant industry. In 1916, as stated above, decalcomania-paper production began in this country. By the act of 1913, decalcomania paper had been placed on the free list. War conditions enabled American manufacturers of gummed paper to start making decalcomania paper, without serious foreign competition. They now claim, however, that the continuance of decalcomania paper on the free list would ruin their business. There seems to be no reason why decalcomania paper should not bear the same duty as gummed paper.

STATISTICAL TABLES.

IMPORTS BY COUNTRIES.

Surface-coated paper.

Imported from—	Fiscal year.					
	1910		1911		1912	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Belgium	1,725,251	$126,010	1,600,600	$114,326	1,623,494	$114,362
France	50,763	12,881	57,626	14,457	41,441	10,782
Germany	2,849,386	345,753	3,205,145	414,970	2,361,213	363,077
Netherlands	3,984	513	10	3	1,121	408
Sweden	54,898	2,281	7,174	270	.....	.....
United Kingdom	617,664	71,955	538,835	61,933	502,837	57,654
All other countries	63,560	7,951	39,745	5,216	19,511	2,515
Total	5,365,506	567,344	5,449,135	611,175	4,549,617	548,798

IMPORTS BY COUNTRIES—continued.

Surface-coated paper—Continued.

orted from—	Fiscal year. 1913		1914		1915	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
.....	1,963,306	$135,894	2,675,191	$169,225	1,361,451	$89,037
.....	48,657	12,380	67,990	10,447	59,705	9,860
.....	2,578,075	395,262	3,646,953	349,575	2,783,939	261,815
s.....	88	61	25,330	2,002	129,876	12,035
.....			105,414	2,787	21,784	1,611
igdom.....	399,290	49,790	298,207	33,689	254,021	28,992
iuntries.....	41,368	3,947	106,420	7,336	174,709	8,523
.....	5,030,784	597,334	6,925,505	620,061	4,785,485	411,873

orted from—	Fiscal year. 1916		1917		1918	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
.....	890,573	$61,054	148,175	$16,035	101,686	$12,634
.....	124,005	17,931	56,252	19,570	29,767	15,797
.....	584,933	46,025	.....	.....	.....	.....
s.....	364	57	770	314	97,630	10,717
.....	58,106	2,231	8,900	1,120	.....	.....
gdom.....	263,041	33,792	250,027	45,484	53,463	17,401
untries.....	34,913	6,460	49,651	7,465	97,607	29,126
.....	1,955,935	167,550	515,775	89,988	380,153	85,675

from—	Calendar year. 1918		1919		1920		1921	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
.....	19,067	$2,716	7,357	$3,637	126,126	$31,089	178,921	$41,885
.....	25,084	13,877	25,773	25,402	99,365	71,507	51,194	32,043
.....	.....	.....	4,502	1,755	586,494	144,523	462,174	97,357
.....	73,953	11,136	14,316	3,326	47	17	712	294
.....	.....	.....	53,393	6,155	.....	.....	908	586
gdom.....	66,793	18,570	5,062	5,837	54,140	27,160	13,758	8,399
intries...	36,733	8,820	23,925	7,988	47,952	13,659	43,394	16,980
.....	221,650	55,119	134,418	54,100	914,124	287,955	751,061	197,534

Decalcomania paper, not printed.

Imported from—	Calendar year. 1918	1919	1920	1921
.....	$142,976	$120,794	$165,130	$130,823
.....	.....	.....	17,610	52,763
.....	.....	.....	1,960	738
.....	.....	.....	606	.....
intries.....	1,393	321	273	.....
.....	.....	.....	.....	762
.....	144,369	121,115	185,579	184,586

IMPORTS FOR CONSUMPTION—REVENUE.

Surface-coated paper (act of 1897).

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
PRINTED OR WHOLLY OR PARTLY COVERED WITH METAL OR ITS SOLUTIONS O R WITH GELATIN (OR FLOCK).						
		Pounds.				*Per cent.*
1908	3 cents per pound plus 20 per cent.	1,323,128	$269,695	$89,495	$0.198	35.94
1909	do	1,584,781	552,524	138,659	.349	25.61
1910	do	270,166	73,441	22,791	.272	31.65
OTHER, N. S. P. F. (UNDER GENERAL TARIFF).						
		Pounds.				*Per cent.*
1908	2½ cents per pound plus 15 per cent.	4,635,476	$341,169	$167,653	$0.074	48.97
1909	do	4,640,520	315,315	162,589	.068	51.55
1910	do	571,675	42,277	20,633	.074	48.81
FROM CUBA (RECIPROCITY TREATY, DEC. 27, 1903).						
		Pounds.				*Per cent.*
1908	2½ cents per pound plus 15 per cent less 20 per cent.	88	$12	$3	$0.137	26.61

Surface-coated paper (act of 1909).

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
WHOLLY OR PARTLY COVERED WITH METAL OR ITS SOLUTIONS, OR WITH GELATIN OR FLOCK, OR IF EMBOSSED OR PRINTED.						
		Pounds.				*Per cent.*
1910	5 cents per pound plus 20 per cent.	1,477,989	$245,138	$122,926	$0.166	50.15
1911	do	1,390,286	288,959	127,761	.206	44.21
1912	do	1,074,275	246,765	103,066	.230	41.77
1913	do	869,365	255,220	94,514	.294	37.03
1914	do	137,858	44,938	15,880	.326	35.34
WHOLLY OR PARTLY COVERED WITH METAL OR ITS SOLUTIONS AND WEIGHING LESS THAN 15 POUNDS PER REAM OF 480 SHEETS, 20 BY 25 INCHES.						
		Pounds.				*Per cent.*
1910	5 cents per pound plus 25 per cent.	13,051	$5,333	$1,985	$0.409	37.23
1911	do	7,792	3,211	1,192	.412	37.12
1912	do	10,900	3,066	1,311	.281	42.78
1913	do	20,166	7,704	2,934	.382	38.09
1914	do	762	284	109	.373	38.42
OTHER N. S. P. F.						
		Pounds.				*Per cent.*
1910	5 cents per pound	3,281,049	$240,074	$164,052	$0.073	68.34
1911	do	3,970,920	312,910	198,541	.079	63.45
1912	do	3,464,142	305,354	173,207	.088	56.72
1913	do	3,751,246	311,975	187,567	.083	60.12
1914	do	545,195	53,206	27,259	.098	51.23

RTS FOR CONSUMPTION—REVENUE—continued.

Surface-coated paper (act of 1913).

Rate of duty.	Quantity.	Value.	Duty collected.	Value per unity of quantity.	Actual and computed ad valorem rate.
LITHOGRAPHIC TRANSFER PAPER NOT PRINTED.					
	Pounds.				*Per cent.*
25 per cent	125,329	$25,564	$6,391	$0.204	25
do	70,965	14,743	3,685	.208	25
do	17,698	3,897	974	.220	25
do	17,638	2,457	614	.139	25
do	26,061	7,899	1,974	.303	25
do	19,318	6,811	1,703	.353	25
do	12,463	5,120	1,280	.411	25
do	69,573	16,720	4,180	.241	25
do	67,226	16,354	4,088	.243	25
MARBLEIZED PAPER, HAND DIPPED.					
	Pounds.				*Per cent.*
25 per cent	224,777	$25,335	$6,333	$0.113	25
do	126,181	15,517	3,879	.123	25
do	60,340	7,949	1,987	.132	25
do	22,003	4,481	1,120	.204	25
do	28,775	6,767	1,691	.235	25
do	14,365	3,341	835	.232	25
do	3,524	1,419	355	.403	25
do	26,905	8,878	2,219	.321	25
COVERING BOXES, N. S. P. F., WHETHER OR NOT EMBOSSED OR PRINTED, EXCEPT BY LITHOGRAPHIC PROCESS.					
	Pounds.				*Per cent.*
40 per cent	5,252,891	$339,953	$135,981	$0.064	40
do	3,603,966	245,470	98,188	.068	40
do	1,519,080	111,394	44,557	.073	40
do	318,854	42,387	16,954	.133	40
do	184,650	23,815	9,526	.129	40
do	28,522	6,226	2,490	.218	40
do	54,285	8,556	3,422	.158	40
do	165,641	28,745	11,498	.174	40
do	69,225	15,493	6,197	.223	40
DUTY REMITTED ON ABOVE.					
	Pounds.				*Per cent.*
Sec. IV, M, act of Oct. 3, 1913.	30,333	$1,820	.....	$0.060	.....
do	70,622	8,611	.....	.121	.....
do	22,058	2,234	.....	.102	.....
)ATED SURFACE OR SURFACES, CALENDER PLATE FINISH.					
	Pounds.				*Per cent.*
25 per cent	57,878	$7,752	$1,938	$0.134	25
do	144,910	16,960	4,240	.117	25
do	57,067	3,344	836	.059	25
do	1,356	252	63	.186	25
do	3,513	287	71	.082	25
do	831	134	34	.161	25
do	7,092	3,741	935	.527	25
do	41,867	19,664	4,916	.470	25
do	162,892	30,496	7,624	.187	25

IMPORTS FOR CONSUMPTION—REVENUE—continued.

Surface-coated paper (act of 1913)—Continued.

Year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unity of quantity.	Actual and computed ad valorem rate.
WHOLLY OR PARTLY COVERED WITH METAL LEAF, OR WITH GELATIN OR FLOCK.						
Fiscal year:		*Pounds.*				*Per cent.*
1914	25 per cent	252,554	$78,165	$19,541	$0.309	25
1915	do	81,671	35,471	8,867	.434	25
1916	do	29,257	9,433	2,358	.322	25
1917	do	14,601	4,655	1,163	.319	25
1918	do	22,253	11,406	2,851	.512	25
Calendar year:						
1918	do	6,495	4,209	1,052	.648	25
1919	do	5,418	4,147	1,037	.765	25
1920	do	37,238	38,460	9,615	1.033	25
1921	do	61,215	27,905	6,976	.455	25
SURFACE-COATED PAPER, N. S. P. F.						
Fiscal year:		*Pounds.*				*Per cent.*
1914	35 per cent		$122,446	$42,856		35
1915	do		95,804	33,531		35
1916	do		37,588	13,155		35
1917	do		39,602	13,860		35
1918	do	110,301	34,161	11,956	$0.310	35
Calendar year:						
1918	do	55,345	24,801	8,680	.448	35
1919	do	93,273	36,883	12,909	.395	35
1920	do	473,869	166,332	58,216	.351	35
1921	do	318,794	91,058	31,870	.288	35
DUTY REMITTED ON ABOVE.						
Fiscal year:						
1914	For use of foreign diplomatic officers.		$20			
1916	Sec. IV, M, act of Oct. 3, 1913.		140			

Paper, including wrapping paper, with the surface decorated or covered with a design, fancy effect, pattern, or character, whether produced in the pulp or otherwise, but not by lithographic process (act of 1909).

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
EMBOSSED OR WHOLLY OR PARTLY COVERED WITH METAL OR ITS SOLUTIONS, OR WITH GELATIN OR FLOCK.						
		Pounds.				*Per cent.*
1910	5 cents per pound plus 20 per cent.	17,859	$1,784	$1,249	$0.100	70.05
1911	do	32,637	4,193	2,470	.128	58.91
1912	do	42,386	7,879	3,695	.186	46.90
1913	do	121,756	16,101	9,308	.132	57.81
1914	do	13,679	1,425	968	.104	68.00
ALL OTHER.						
1910	4½ cents per pound	704,379	$64,060	$31,697	$0.091	49.48
1911	do	772,865	59,007	34,778	.076	58.94
1912	do	706,049	68,417	31,772	.097	46.44
1913	do	411,003	46,114	18,495	.112	40.11
1914	do	81,565	15,547	3,670	.191	23.61

TS FOR CONSUMPTION—REVENUE—continued.

gummed, or with the surface decorated or covered with a design, fancy character, whether produced in the pulp or otherwise, except by lithoact of 1913).

Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
	Pounds.				*Per cent.*
35 per cent	298,996	$27,647	$9,676	$0.092	35
do	482,866	25,155	8,804	.052	35
do	188,367	8,983	3,144	.048	35
do	57,328	9,342	3,269	.163	35
do	345,630	32,688	11,440	.095	35
do	346,438	32,876	11,507	.095	35
do	7,847	6,732	2,356	.858	35
do	29,641	14,019	4,907	.473	35
do	29,735	7,306	2,557	.245	35

Decalcomania paper, not printed (act of 1913).

Rate of duty.	Value.		Rate of duty.	Value.
		Calendar year:		
Free	$36,302	1918	Free	$144,378
do	70,333	1919	do	121,115
do	65,986	1920	do	185,579
do	148,192	1921	do	184,586
do	131,265			

DOMESTIC EXPORTS.

Wax paper.

Exported to—	Calendar year.			
	1918	1919	1920	1921
	$431	$12,093	$10,696	$10,857
	52,789	67,951	82,175	25,428
	3,836	9,040	13,201	17,933
	40,252	24,684	32,130	6,573
	14,458	140,631	46,779	13,064
	8,904	76,842	14,760	11,245
	9,078	23,571	1,185	109
	8,765	25,392	4,000	1,176
	20,755	53,696	40,167	12,371
	6,785	27,250	16,272	11,789
	20,881	14,953	44,557	6,223
	49,968	76,064	97,888	16,366
	228,137	552,167	403,810	133,134

RATES OF DUTY.

Surface-coated, gummed, decalcomania, and decorated paper.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1890	420	Papers known commercially as surface-coated papers, and manufactures thereof * * *.	35 per cent ad valorem.
1894	308	* * * surface-coated papers, and manufactures thereof, * * *.	30 per cent ad valorem.
1897	398	Surface-coated papers not specially provided for in this Act.....	2½ cents per pound and 15 per cent ad valorem.
		If printed, or wholly or partly covered with metal or its solutions, or with gelatin or flock.	3 cents per pound and 20 per cent ad valorem.
1909	411	Papers with coated surface or surfaces, not specially provided for in this section.	5 cents per pound.
		If wholly or partly covered with metal or its solutions (except as hereinafter provided), or with gelatin or flock, or if embossed or printed.	5 cents per pound and 20 per cent ad valorem.
		Papers, including wrapping paper, with the surface decorated or covered with a design, fancy effect, pattern, or character whether produced in the pulp or otherwise, but not by lithographic process.	4½ cents per pound.
		If embossed, or wholly or partly covered with metal or its solutions, or with gelatin or flock.	5 cents per pound and 20 per cent ad valorem.
		Provided, That paper wholly or partly covered with metal or its solutions, and weighing less than fifteen pounds per ream of four hundred and eighty sheets, on a basis of twenty by twenty-five inches, shall pay a duty of—	5 cents per pound and 25 per cent ad valorem.
1913	324	Papers wholly or partly covered with metal leaf or with gelatin or flock, papers with white coated surface or surfaces, calender plate finished, hand dipped marbleized paper, * * * and lithographic transfer paper not printed, * * *.	25 per cent ad valorem.
		* * * Papers with coated surface or surfaces suitable for covering boxes, not specially provided for, whether or not embossed or printed except by lithographic process * * *.	40 per cent ad valorem.
		* * * All other paper with coated surface or surfaces not specially provided for in this section * * *.	35 per cent ad valorem.
		* * * Uncoated papers, gummed, or with the surface or surfaces wholly or partly decorated or covered with a design, fancy effect, pattern, or character, whether produced in the pulp or otherwise except by lithographic process * * *.	Do.
	567	* * * decalcomania paper not printed.....	Free.

COURT AND TREASURY DECISIONS.

"Surface" has no particular trade meaning different from the usual understanding of the word and applies alike to both sides of a paper, one of which is rough and uncalendered and the other smooth and finished. Where a design or pattern is embossed on one side of a paper, the paper is one the surface of which is "decorated or covered with a design." (G. A. 6937, T. D. 30083, of 1909; see also Dunn *v.* United States, 2 Ct. Cust. Appls., 65.)

So-called lithographic transfer paper, covered with a preparation and used for the purpose of transferring lithographic impressions from one stone to another, was held under the act of 1897 not to be a surface-coated paper because not known in trade as such. (G. A. 4794, T. D. 22584, of 1900.) Nor was paper coated on one side with mucilage and intended for use in making labels and paper boxes. (G. A. 4837, T. D. 22723, of 1901.) But paper covered with barium platinum cyanide crystals, used in Röntgen-ray apparatus to show the shadow, was held dutiable as surface-coated paper. (G. A. 5009, T. D. 23322, of 1901.) In a decision, however, under the act of 1913, surface-coated paper known as Röntgen-ray or X-ray paper used in connection with X-ray photography, was held properly classable under the provision for "albuminized or sensitized paper or paper otherwise surface-coated for photographic purposes" in paragraph 324

ın under the provision in said paragraph for "all other paper
ed surface or surfaces not specially provided for." (G. A.
D. 36419, of 1916; followed in Abstracts 40208, of 1916;
1917; and 42076, of 1918.) A handmade surface-coated
ı held dutiable under paragraph 401 of the act of 1897 as
ı paper decorated and not as surface-coated paper under
398. (G. A. 6687, T. D. 28593, of 1907.)
iff provision for lithographic prints appeared for the first
ıe tariff act of 1890. From that time until 1903 decalco-
ıre classified for tariff purposes as lithographic prints. In
an importation of decalcomania pictures was classified by
ıor as lithographic prints under paragraph 400 of the act
The importers, who admitted they represented domestic
ırers and had made this importation for the purpose of secur-
ıdication which if successful would result in granting them
tariff protection, contended that the merchandise was
lutiable at a higher rate under paragraph 400 as labels
whole or part in metal leaf. The protest was overruled
15, T. D. 24723, of 1903), but this decision was reversed
rcuit Court for the Northern District of Illinois, no
being presented by the Government (Wakem *v.* United
D. 25827). The decision of the circuit court, however,
llowed by the Treasury Department, which, after taking
ı of the Attorney General, said it was not incumbent upon
ment to accept the ruling of the court, and instructed
ficials to continue to impose the lower rate on such mer-
ı lithographic prints. (T. D. 25848, of 1904.)
ıanias printed lithographically from stone and used to
decorative picture or design to the surface of various
re held to be dutiable as lithographic prints under para-
f the act of 1897, and not dutiable as surface-coated paper,
der paragraph 398, nor as manufactures in chief value
ıder paragraph 193. In this case the importation was
/ the collector as surface-coated paper, printed, and the
ıimed it was dutiable as lithographic prints. At the trial
ers failed to appear, but special counsel representing
anufacturers, the same firm interested in the case of
United States, supra, appeared and contended that
rate claimed by the importers nor that assessed by
· was correct, but that by reason of the fact that mineral
used in printing the articles they were properly dutiable
raph 193 as manufactures in chief value of metal at a
ıf duty. The board rejected this contention, relying upon
ırthur *v.* Moller (97 U. S. 365) decided 30 years previous
ıions of the courts, the board, and practice of the classify-
or 30 years. (G. A. 6630, T. D. 28277, of 1907.) An
taken from this decision to the United States Circuit
rn District of Pennsylvania, where it was reversed, and
dise held to be surface-coated paper wholly or partly
metal under paragraph 398. (United States *v.* Hemp-
ed. 290; T. D. 28820.)
case, however, the Court of Customs Appeals refused to
ıcision of the circuit court, saying that it appeared the
in that court were really ex parte and therefore the

decision could not be given the weight it otherwise would have had. (United States *v.* Borgfeldt, 2 Ct. Cust. Appls., 197, of 1911.)

Paper used in the printing of decalcomanias, single transfer, is a one-thickness paper the surface of which is coated with a preparation of gum and duplex lithotransfer, is made of two layers united, the lower being plain and the upper coated with a gummy substance. This paper when lithographically printed is used to transfer lithographic impressions to pottery ware, etc. Such papers were held to come within paragraph 411 of the act of 1909. By changing the phrase "surface-coated papers, not specially provided for," in paragraph 398 of the act of 1897, to "papers with coated surface or surfaces, not specially provided for" in paragraph 411 of the act of 1909, Congress intended that such papers that in fact have a coated surface or surfaces should come within paragraph 411. (American Express Company *v.* United States, 2 Ct. Cust. Appls. 459, of 1912.)

Decalcomanias in ceramic colors, backed with metal leaf, were held to be dutiable at 65 cents per pound under paragraph 412 of the act of 1909 and decalcomanias not of that kind (except toy decalcomanias) were held to come within the provision for all other decalcomanias in that paragraph. (United States *v.* Palm, 4 Ct. Cust. Appls. 1, of 1913.)

Plain paper coated with metal, either by applying a metal wash thereto or by pasting metal leaf thereon, was held to be paper covered with metal or its solutions within the meaning of paragraph 411. (Kupfer *v.* United States, 2 Ct. Cust. Appls. 302, of 1911.)

Paper subjected to processes by which, after a finished design in colors had been imprinted on it, it was saturated with linseed oil and no varnish or other substance was applied to produce an added surface, was held not to be a surface-coated paper, but dutiable as a paper with the surface decorated or covered with a design, fancy effect, pattern, or character within paragraph 411 of the act of 1909. (Knauth *v.* United States, 4 Ct. Cust. Appls. 11, of 1913.)

White surface-coated paper, flint-glazed, suitable for covering boxes, was held to be dutiable under paragraph 324 of the act of 1913 as "papers with coated surface or surfaces suitable for covering boxes" rather than under the provision in the same paragraph for "papers with white coated surface or surfaces, calender plate finished." (G. A. 7808, T. D. 35878, of 1915.)

Paper coated with a solution of powdered tin and suitable for use in covering the edges of boxes was held to come within the provision in paragraph 324 of the act of 1913 for "papers with coated surface or surfaces suitable for covering boxes" rather than under the provision in said paragraph for "papers wholly or partly covered with metal leaf" or "paper with coated surface or surfaces not specially provided for." (G. A. 7945, T. D. 36588, of 1916.)

Paper one side of which showed mottled effects in various colors was held to have been properly classified as "papers with coated surface or surfaces suitable for covering boxes" under paragraph 324 of the act of 1913, the importers failing to prove that the colored matter appearing on the surface of the paper was not in fact a coating. (Abstract 40074, of 1916.)

Photographic mounts or holders, composed wholly or in chief value of imitation parchment paper or of paper with the surface decorated or covered with a design or pattern, were held dutiable

ific provision for articles so composed in paragraph 324
1913 rather than under the provision in paragraph 332
ires of paper. Similar articles composed of cardboard
under paragraph 332 as manufactures of paper rather
ragraph 324 as manufactures of surface decorated paper.
T. D. 36191, of 1916; Abstracts 39492, of 1916; 39852,
3, of 1917; 41029, of 1917; 41740, of 1918.)
l initials made from metal-coated and surface-coated
within paragraph 324 of the act of 1913. (Abstracts
3; 42552, of 1918.)
white-coated surface, calender plate finished, and in-
ite blocking paper, was held to be a calender plate
within the meaning of the descriptive provision there-
aph 324 of the act of 1913. (Abstract 40075, of 1916;
ostracts 40468, of 1916; 41273, of 1917; 41843, of 1918.)
vn as "Perlmutter," one surface of which has not been
other having been treated with a layer of gelatin and
f lacquer, presenting a shiny, glossy, and variegated ap-
surface-coated paper within paragraph 324 of the act of
dutiable under the provision in that paragraph for "pa-
or partly covered with metal leaf or with gelatin or
with white-coated surface or surfaces." (Bendix Paper
States, 8 Ct. Cust. Appls. 366, of 1918.)
rdboard bells used in the manufacture of Christmas-
its were held not to be dutiable as articles composed
ated paper under paragraph 324 of the act of 1913, but
anufactures of paper, it being shown that the articles
after being manufactured. (G. A. 8317, T. D. 38255, of

CLOTH-LINED OR REINFORCED PAPER.

General Information.

paragraph 324: * * * cloth-lined or reinforced papers, * * *
d valorem. * * *.

DESCRIPTION.

"cloth-lined or reinforced paper" is self-descriptive.
sometimes used where an especially strong, nontearable
cking paper is needed, but there are also cheaper grades
t very durable. It is much used in merchandise ship-
cularly for lining cases or covering machinery shipped
l for outside coverings for cases shipped on flat cars.

DOMESTIC PRODUCTION.

—Kraft paper made entirely of sulphate wood pulp is
ost commonly cloth lines or otherwise reinforced, for
is the strongest and toughest wood-pulp paper. To some
er papers are used. Asphalt is used for cementing pur-

t.—The machinery used in lining paper with cloth or
inforcing it is mainly of domestic manufacture.

Methods of production. In making cloth-lined paper, one sheet of paper is coated with a layer of asphalt. A sheet of cloth is then superimposed thereon while the asphalt is hot. In making string reinforced paper, string is laid over the asphalt-coated paper. A sheet of paper is placed on top, and the whole thing pressed firmly together.

Geographic distribution. Of 9 mills reporting to Lockwood's Directory of the Paper and Allied Trades as manufacturing cloth lined paper in 1920, 5 are in Massachusetts, 2 in New York, 1 in New Hampshire, and 1 in Pennsylvania.

Amount of output. The annual production of cloth-lined paper in the United States is estimated at 1,000 to 1,500 tons.

Domestic exports. Domestic exports of cloth-lined paper are negligible.

IMPORTS.

The following table shows our imports for consumption of reinforced or cloth-lined paper from the fiscal year 1914 through the calendar year 1921.

IMPORTS FOR CONSUMPTION—REVENUE.

Reinforced or cloth lined paper (act of 1913).

Year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:		Pounds.				Per cent.
1914	35 per cent ad val.	11,145	$2,292	$796	$0.161	
1915	do	14,000	5,135	1,969	.352	
1916	do	13,000	2,965	1,002	.165	
1917	do	5,110	4,356	1,525	.793	
1918	do	14,318	8,775	3,021	.734	
Calendar year:						
1918	do	8,530	5,500	1,925	.645	
1919	do	4,000	4,800	1,680	1.330	
1920	do	10,150	7,500	2,625	.962	
1921	do	11,110	11,165	3,905	.779	

In comparison with domestic production these imports are of small importance. In the calendar years 1920 and 1921, although imports were in much larger volume than during the average of the period covered, they were at an annual rate of considerably less than 1 per cent of the estimated domestic production of 1,000 to 1,500 tons.

According to the trade, these imports come principally from England and Germany.

PRICES.

The following table shows the July prices, per pound, on standard grades of reinforced paper from 1914 to 1921.[1]

July—	K860—40 inches.	K1660—40 inches.	July—	K860—40 inches.	K1660—40 inches.
1914	$0.085	$0.099	1918	$0.111	$0.
1915	.086	.089	1919	.111	
1916	.089	.109	1920	.111	
1917	.158	.135	1921	.111	

[1] Furnished by the Angier Mills, Ashland, Mass.

TARIFF HISTORY.

loth lined or reinforced paper was first separately mentioned in act of 1913, at a duty of 35 per cent ad valorem.

COMPETITIVE CONDITIONS.

here is practically no foreign competition. As pointed out above, orts in the calendar year 1920, although considerably above the rage of preceding years, were less than 1 per cent of domestic pro-tion. A comparison of domestic prices with those of imported h-lined paper since 1914 shows the average price of the imported duct in each of the years named to be much higher than the quo-ons on standard domestic grades. This indicates that imports sist mainly of high-grade specialties which hardly come into com-ition with the domestic grade.

PHOTOGRAPHIC AND BLUE-PRINT PAPER.

General Information.

ct of 1913, paragraph 324: * * * albuminized or sensitized paper or paper rwise surface coated for photographic purposes, 25 per centum ad valorem; plain c papers for albuminizing, sensitizing, baryta coating, or for photographic or r printing processes, 15 per centum ad valorem.

DESCRIPTION.

Two groups of paper are included in the above tariff designation, photographic and platinum paper and (2) blue-print and brown-nt paper. Each of these in turn is divided into two kinds, (1) the aw" paper, which is practically the same as high-grade writing per, and (2) the finished paper which is the "raw" paper after it s been sensitized for printing by photographic, blue-print, or brown-nt processes.

As the names imply, these are the kinds of light-sensitive paper on ich photographs, photostats, blue prints, and other similar forms prints are made.

There are two kinds of raw photographic paper, namely, single-ght and double-weight. The single-weight papers, which are tally of higher quality, weigh from 27 to 36 pounds per ream of sheets 18 by 23 inches. They are often sold on the weight basis one sheet one meter square, a common weight for a sheet of this being 110 to 115 grams, or about 31 pounds on the above-named m basis. The double-weight papers vary from 235 to 260 grams sheet of one square meter, or from 64 to 74 pounds per ream of sheets 18 by 23 inches.

The finished photographic paper is sold also in single and double ght, in sheets of an immense variety of dimensions. It is also d in rolls. Finished blueprint paper is usually sold in rolls con-ning paper 50 yards in length and 30, 36, 42, or sometimes 54 hes in width. There are three weights of the paper. The two st common weights are, on the basis of a ream of 500 sheets 17 by inches each, the 17-pound weight, used for mailing purposes, and 24-pound weight, used for ordinary shop purposes. Also, a

...graphic paper, on the above ream basis, is made for the use o... architects, construction concerns, and others who do much work i... the open air.

It is suggested that inasmuch as the albuminizing process is obso... have the words "albuminized" and "albuminizing" be omitted from... the tariff law.

DOMESTIC PRODUCTION.

MATERIALS.

...New photographic paper must be made from ... which unite in a uniform texture throughout, if the pape... what be termed a "clear look through." The stock use... ...ation, or the surface of the finished picture wi... ...also be of such quality that the paper mad... ...in chemical solutions and no... ...chemical purity.

...who ... may have less qualities. it is usuall... ...have been entirely pure. with th... ...cotton rags a superior wood pulp an... ...and ... rags are used. th... ...manufacturers consi... ...but now a larg... ...are made entirel... ...additions. Th... ...if ... ...paper it h... ...The ...

e cheaper grades range ordinarily from 50 to 70 per cent sulphite. e most important commercial grade is of rag and sulphite in equal portions.

The blue-print paper imported from Germany consisted of 50 per t cotton rag and 50 per cent sulphite pulp. The French paper, made in the Johannot mills, is a better grade, consisting either all linen-rag stock or of linen and cotton rags mixed.

Blue-print paper, like photographic paper, must be sized to pre- nt undue absorption of the liquids used in the sensitizing and nting processes. Various kinds of sizing, particularly glue and in, are used for this purpose. Fillers, such as china clay and c, are also employed to some extent.

The materials used in sensitizing the raw paper are extremely ried as each concern which carries on this process uses its own vate formula. The principal ingredients are potash salts and iron ts. Some of the chemicals used are citrate of iron, red prussiate potash, ammonia, iron ammonium citrate, oxalic acid, citric acid, ric oxide, and ferric ammonia oxalate.

EQUIPMENT.

Photographic paper.—The raw paper is produced on machines like ose used to make fine paper (see Tariff Information Survey M–6). the United States the business of putting a sensitive coating on e raw paper is limited in extent and individual requirements, and ecifications for machines differ so that no standard coating machines r regular supply to coating mills are manufactured. The ma- inery used in sensitizing paper has, as a rule, been developed in the ant in which it is used. In a number of cases the concerns using design and manufacture it themselves, though some companies at manufacture wall-paper printing machines and machines for eparing so-called surface-coated paper also manufacture sensitizing achines for sale.

Baryta-coating machinery is practically the same as that used in ated-paper mills.[1]

Some sensitizing machinery is imported from Germany and Eng- nd, notably the Meisenbach machines made in Germany and the ott machines made in England. It appears to be a matter of inion whether the domestic or the imported machinery is the tter.

Blue-print paper.—As in the case of photographic paper, the raw ue-print paper is produced with the same kind of equipment that is ed in making fine writing paper. It is usually made in writing- per mills. The blue-print coating machines are entirely American ade, often designed and manufactured by those who use them. far as is known only one firm in the United States builds them for le to coating mills, and the business of this company is said to be ainly with concerns manufacturing blue-print paper for their own e and not for sale.

Several concerns in Germany construct coating machines for sale manufacturers of blue-print paper; one American manufacturer blue-print paper states that blue-print paper sensitizers in this untry can build their own machines for much less than the cost of nstruction of the German machines.

[1] See section on surface-coated paper, p. 1.

METHODS OF PRODUCTION.

Photographic paper.—Raw photographic paper is made in pra cally the same way and of the same materials as high-grade writ or book paper, except that more care must be exercised in remov foreign matter from the rags and other materials used. Each ma facturer usually has his own trade secrets, i. e., certain formulæ beater "furnish" and certain processes differing in detail from cesses of other manufacturers.

The raw paper undergoes two successive processes—baryta coa and sensitizing—before it is ready for purposes of photograp The baryta coating solution consists of barium sulphate held in pension in a solution of high-grade gelatin containing some for dehyde for hardening purposes. This solution is put on by bru rubbing back and forth across the grain of the paper. It is then d by passing it in festoons through a blast of hot air, smoothed polished by a calendering process, and wound up in rolls. The p ess is similar to that of coating paper for use in halftone print which is described in another section of this report. The mach used in making the highest grades of coated book paper could, a few modifications, be used for coating paper with baryta for tographic purposes.

The sensitizing process consists in applying to the baryta-co paper a warm emulsion, the composition of which is the trade se of each sensitizing concern. The emulsion is made up principall sensitive silver salts and gelatine; chrome alum is added to har the gelatin. Dyes are introduced in order to make the emul sensitive to certain colors. The paper is allowed to float on to the emulsion without dipping in. It is then led through a refriger box or passed over a chilling roll to cool the emulsion. The remai moisture is removed by passing the paper in festoons or on a zontal conveyor through conditioned air to dry the coating. albuminizing process went out of use about 20 years ago.

Blue-print paper.—The raw blue-print paper, like the raw ph graphic paper, is produced by the same processes as high-g writing paper and book paper, except that it is specially sized this purpose. Two kinds of paper are usually made into blue pr a heavy paper used for shop purposes and a thin or medium p used for mailing and filing. The former is practically the same ledger paper, and the latter similar to a bond paper. (See T Information Survey M–6 on Fine Paper, pp. 10, 11.) The raw p is cut into rolls varying in width from 24 to 54 inches, and in we from 140 to 300 pounds.

In the coating mill the raw paper as received from the p mills is put on the coating machine, where it runs over one or coating rollers, being coated with blue-print solution on one side The solution consists of the chemicals named under the hea "Materials" (see p. 22). From the coating rollers the paper through a dry box and reaches the other end of the machine pletely dry. It is then wound in rolls in 10 to 100 yard length cut into sheets, in which forms it is marketed.

GEOGRAPHIC DISTRIBUTION.

Raw photographic and blue-print paper is produced principally in ssachusetts and New York. The production of the finished paper nuch more widely distributed. New York, Massachusetts, Penn-vania, and Illinois are the main States manufacturing it.

HISTORY OF THE INDUSTRY.

Sensitized photographic paper has been made in the United States 35 years or more. The American Photographic Paper Co. was first to make raw photographic paper. It began manufacture in)1. Up to the outbreak of the European war, however, a large)portion of the raw photographic paper used by sensitizers in the ıited States was imported. The domestic industry was stimulated ring the war by need for photographic paper in the Government, well as in the commercial world, and because of the fear that im-rts would be cut off. Several mills made a paper for this purpose, t it was not entirely satisfactory.

DOMESTIC PRODUCTION AND CONSUMPTION.

Photographic paper.—No figures are obtainable for total production raw or sensitized photographic paper. A rough estimate places r yearly output of raw photographic paper at 10,000,000 pounds, th an average annual value during the war of $3,000,000. At cer-n times during the war, however, notably in 1918, it is probable at the production considerably exceeded 10,000,000 pounds. It is t unlikely that at the present time (1921) the output is in excess of ,000,000 pounds, for one concern alone reports an annual produc-n of 6,000,000 pounds. Nevertheless, production is undoubtedly ıaller than it was during the war, for at least one concern which ınufactured raw photographic paper during the war has now ısed making it.

Because of the lack of accurate production figures, it is impossible estimate satisfactorily what proportion the domestic output repre-nts of the total raw photographic paper used each year in the ıited States.

Blue-print paper.—No figures are available for production of raw ıe-print paper. The annual output of sensitized blue-print paper the United States is variously estimated by sensitizers at from)00 to 10,000 tons.

DOMESTIC EXPORTS.

Figures for domestic exports of photographic and blue-print paper e not separately shown by the Department of Commerce. Data pplied by manufacturers indicate that practically no raw photo-aphic paper is exported from the United States. One large sensi-ing concern making raw photographic paper exports to its own ctories in Canada, Europe, and Australia. However, in sensitized ıotographic paper, the United States has an important export ısiness, sending shipments all over the world. There is no evidence at appreciable quantities of raw blue-print paper are exported. ıe export trade is handicapped by the fact that this sort of paper ter a short time deteriorates in quality. One company estimates

that not over 1 per cent of the finished blue-print paper manu tured on the Atlantic and Pacific coasts is exported. The s amounts exported go principally to Canada, Latin American c tries, and the Far East, practically none going to Europe.

FOREIGN PRODUCTION.

Germany and France are the most important foreign produce raw photographic and raw blue-print paper. Our principal c petitors in sensitized photographic paper are England, Belgi and Germany. Foreign production of sensitized blue-print pap of little concern to the domestic industry, for the United St produces practically all that it uses.

IMPORTS.

In the import statistics by countries of origin raw and sensit photographic and raw and sensitized blue-print paper are gro under the heading "photographic paper" (see table, p. 31). to the war our total imports of photographic paper of this ge description averaged a little above $1,000,000 per year. After they decreased, the lowest amount in any year being $143,27 the calendar year 1919. Figures for quantities were first colle in 1919. Total imports in 1920 (1,198,320 pounds) were more t three times the 1919 figures, and imports in 1921 were 1,899 pounds.

In each year from 1910 to 1915 Germany supplied more than our imports of photographic paper; France was the next largest tributor. Belgium and the United Kingdom were third and fo respectively. During the later years of the war France was the country that sent us photographic paper in any quantity. In Germany had again become important as an exporter of photogra paper to the United States, sending us shipments of a greater v than those received from any other country.

In the statistics of imports for consumption raw photogra paper is separated from the sensitized, but blue-print paper is distinguished (see p. 31). The figures for the sensitized pa however, represent almost exclusively photographic paper as dis from blue-print paper, as imports of the latter amount to practi nothing.

Imports of plain basic photographic paper for albumini sensitizing, or baryta coating for photographic or solar prin process (which includes raw photographic and raw blue-print pa averaged over 4,000,000 pounds per year from 1910 to 1916. largest amount, 5,826,241 pounds, was imported in 1914. Imp decreased rapidly after 1916, reaching a low level of 251,588 po in the calendar year 1919. In 1920 they increased to 641,663 pou and in 1921 to 951,472 pounds.

Figures for the imports for consumption show that in genera have imported sensitized paper of considerably smaller value that of the raw paper imports. Measured quantitatively, imp of sensitized paper, as compared with those of raw paper, have even smaller than the comparative values would indicate. (Quan figures were not compiled until 1919.) From 1908 to 1915 imp of sensitized photographic paper averaged about $450,000 per an

fter 1915 they decreased to almost nothing in 1918; they have vived somewhat, however, since 1918, although they are still much elow the pre-war levels. The raw photographic and blue-print aper comes mainly from Germany and France, and the sensitized notographic paper from England, Belgium, and Germany. As ated above, practically no sensitized blue-print paper is imported.

PRICES.

PHOTOGRAPHIC PAPER.

Raw.—Prices at different dates from January, 1912, to June, 1921, n both the domestic single weight and double weight raw photo-raphic papers, as furnished by a manufacturer, are given below. he quotations on single weight paper apply to paper in reams of 30 sheets, 18 by 23 inches, weighing from 27 to 36 pounds per ream, nd the quotations on double weight paper to paper in reams of the ame number of sheets and size of sheet weighing 72 pounds per ream. he prices given are f. o. b. mill.

Date.	Single weight.	Double weight.
	Per pound.	*Per pound.*
nuary, 1912	$0.23	[1]
ebruary, 1917	.30	$0.25
ovember, 1918	.31	.30
ne, 1920	.35	.30
ne, 1921	.32	.29

[1] Price not furnished. Probably was from 1 cent to 3 cents lower than the single-weight price.

The prices of raw photographic paper fluctuated much less during he war and after than did the prices of most other kinds of paper. n July, 1921, the price of the domestic paper was not much above re-war levels. Consumers of imported raw photographic paper say hat they pay little more for their paper than they did prior to he war.

Sensitized.—The 1914 prices on certain standard sizes and grades f sensitized photographic paper are compared in the following table vith their prices in July, 1921. The prices given are the manufac-urers' catalogue list prices.[1]

Grade and size.	1914		July, 1921.	
	Single weight.	Double weight.	Single weight.	Double weight.
Velox:	*Per gross.*	*Per gross.*	*Per gross.*	*Per gross.*
4 by 5 inches	$2.00	$2.50	$2.30	$2.90
5 by 7 inches	3.50	4.40	3.90	4.90
8 by 10 inches	9.00	11.25	9.00	11.25
11 by 14 inches	17.50	21.90	17.00	21.25
Azo:				
4 by 5 inches	1.00	1.25	1.35	1.70
5 by 7 inches	1.75	2.20	2.30	2.90
8 by 10 inches	4.00	5.00	5.30	6.65
11 by 14 inches	8.00	10.00	10.00	12.50

[1] Furnished by Eastman Kodak Co.

It will be noted that prices in July, 1921, were very little higher than in 1914; in one case the July, 1921, price is lower than the 1914 price. An unusual feature in the situation is that the price list of 1914 remained operative up to October, 1919. In other words, there was no increase during the war. The increase made in 1919 averaged 22.3 per cent for Ano and 19.8 per cent for Velox. From October, 1919, to the present time (November, 1921) there has been no increase.

BLUE-PRINT PAPER.

The prices furnished by different sensitizers of blue-print paper show a great variation in the tendencies of the prices of different commodities during and since the war. The following table shows the prices charged by one manufacturer to consumers for finished blue-print paper of 50 per cent rag stock in 50-yard rolls of three standard widths:

Year.	Width.		
	Inches.	Inches.	Inches.
	Per sq.	Per sq.	Per sq.

ed nearly 29 per cent. The 1913 rate was 15 per cent. However, ar conditions obscured the effect of the lowered tariff, and it is im- ssible to say whether or not the decreased rate would have resulted increased imports had conditions remained more nearly normal. actual fact, imports of plain basic paper fell off sharply during e war.

COMPETITIVE CONDITIONS.

Sensitized blue-print paper.—In considering competitive relations ith foreign countries, sensitized blue-print paper may be left out of nsideration as it is imported in only negligible amounts. One rea- n for this is the same fact that partially accounts for the absence of ports of this commodity, namely, that it quickly deteriorates with e. Another reason, as given by a domestic manufacturer of sensi- ed blue-print paper, is that the raw paper of the cheaper grades ade in the United States costs the sensitizer less than European per of the same quality sells for. What small quantities of finished ue-print paper are imported are of the higher grades.

Raw blue-print paper.—The manufacturer quoted on the absence foreign competition in sensitized blue-print paper, states also that ports of raw blue-print paper are too limited to be of concern to merican manufacturers of the raw paper. He adds that the raw per import is of a quality and finish that is not procurable in the nited States and is imported only for certain special purposes. On e other hand, a manufacturer of raw blue-print paper states that nce the war the influx of foreign paper at a low price has cut mate- ally into his business.

Raw photographic paper.—Foreign competition is much more rious, however, in the photographic paper industry. Before the ar the imports of raw photographic paper were probably a con- derable proportion of the total paper sensitized, apparently run- ng sometimes as high as one-half. When war conditions caused decline in imports, a number of plants were constructed to meet e deficiency. These new plants, and naturally the old ones too, e seriously menaced by a renewal of the old import trade, for the mbined capacity of the present mills plus a possible pre-war scale imports would be more than enough to supply the domestic mand. Apparently thus, a portion of the domestic trade or a rtion of the import trade must be sacrificed, and upon the deci- on as to which depends the amount of duty that should be placed the raw photographic paper.

It may be of significance to analyze the arguments set forth by oducers and consumers of raw photographic paper. A concern at for many years prior to the war made raw photographic paper ys that immediately following the reduction in duty in 1913, reign competition began to be formidable, and but for the war ould have driven it out of business. It says that at the present wer foreign prices, if the duty remains unchanged, it will have to ose its mills. A company which undertook the manufacture of raw hotographic paper during the war has entirely ceased making that nd of paper, stating that its war-time customers are returning to reign sources of supply because the American cost of production is gher than the price of the foreign paper delivered in the United tates. A large concern which sensitizes all or a large part of its tput also states that the American cost of production of raw paper

is higher than the price of the foreign paper delivered in the United States. All the companies referred to desire to have the American product protected, their contention being that the American raw paper is satisfactory to the American consumer.

This contention, however, is contraverted by a large sensitizing firm that does not make its own raw paper. It maintains that the American product, as far as it is sold to sensitizers, is not so good as the imported paper, and that whatever the duty, it must continue to import raw paper if the quality of its product is to be kept up. The following reasons are assigned for the inferior quality of the domestic product: (1) The water available in this country is not so good for the purpose as that available in Europe; (2) linen rags and other raw materials are more easily obtained in Europe; and (3) the art of raw photographic paper making has not been developed as far here as in Europe, and the workers in the mills have not had as careful training. The same company states that it has failed to interest American mills in attempting to produce paper of the quality produced in Europe.

The truth seems to be that in the United States, in the photographic paper industry as in other lines of business, it ordinarily brings higher returns, for a given amount of capital, to maintain a large output of medium-grade products than to maintain a small output of high-grade products.

American manufacturers generally agree that in regard to water the United States, particularly New England, is at no disadvantage as compared with Europe. On the other hand, it is asserted in other quarters that foreign manufacturers of raw photographic paper have uniformly refused, because of the unsuitability of the water, to establish mills in the United States. The European advantage of more easily obtainable rags and other raw materials may very likely make possible a somewhat lower cost of production, but not necessarily a superior quality of product. Advantages in training and skill of workers and superior technique are hard to overcome, but they can be surmounted if American manufacturers will make the effort.

Summing up the situation, it may be said that whatever the comparative quality of the domestic and imported raw photographic paper, the advantage of lower cost of production is likely to be with the European mills for some time to come, and that because of increased equipment installed during the war a return of imports to their pre-war volume might seriously embarrass the domestic industry.

Sensitized photographic paper.—Foreign competition in sentitized photographic paper is apparently not so keen an issue as in the raw paper. The proportion of imports to domestic production is considerably less than in the case of the raw paper, for not only is domestic production of sensitized paper greater, but the absolute quantity of imports (though not always the value) has in the last 13 years probably been much less than the quantity of imports of raw paper, although, as stated above, import figures for raw photographic and raw blue-print paper can not be separated.

A large manufacturer of sensitized photographic paper says that protection for the American sensitizing industry is needed because Germany can produce it at a lower cost. The main reason assigned for the difference in cost is that most of the sensitizers in this country are to a large extent dependent on imported raw paper, barium sulphate

gelatin, on account of the fact that the qualities of these materials ded are not available to sensitizers in this country. The German nufacturer, on the other hand, can secure these materials cheap his own country. The lower cost of labor in Germany and the external value of the mark compared with its value inside Ger- ny also aid the German in marketing his paper in the United tes.

STATISTICAL TABLES.

IMPORTS BY COUNTRIES.

Photographic paper.

ported from—	Fiscal year								
	1910	1911	1912	1913	1914	1915	1916	1917	1918
ium	$88,552	$114,599	$115,882	$149,772	$106,368	$50,157	$7,904	.....	.....
mark	.....	.....	.....	.....	.....	3,546	94,838	$91,977	$24,519
ice	188,046	386,948	228,994	363,694	447,533	273,086	421,516	567,899	352,468
nany	452,765	559,762	529,816	649,822	728,469	654,706	347,392	.....	.....
ierlands	29	.....	52	.....	36	98,131	8,324	351	.....
ed Kingdom	22,324	22,323	34,256	70,782	67,403	46,330	44,386	59,326	23,709
ther countries	10,224	4,877	818	4,572	3,334	218	25,158	45,172	25,458
Total	761,940	1,088,509	909,818	1,238,642	1,352,143	1,126,174	949,518	764,725	426,154

Imported from—	Calendar year.						
	1918	1919		1920		1921	
		Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
gium	.....	28,894	$6,476	170,551	$40,608	121,431	$31,118
mark	.....	.....	.....	.....	.....	.....	.....
nce	$182,029	230,865	95,673	530,834	94,527	490,494	87,845
many	.....	21,983	5,139	450,759	163,764	1,252,385	185,975
herlands	.....	.....	.....	656	206	.....	.....
ted Kingdom	19,551	21,676	36,508	27,692	54,661	28,171	37,666
other countries	9,481	107	83	17,828	6,564	7,414	1,279
Total	211,061	303,525	143,279	1,198,320	360,330	1,899,895	343,883

IMPORTS FOR CONSUMPTION—REVENUE.

otographic paper, plain basic for albuminizing, sensitizing, or baryta coating for photographic or solar printing process.

Year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
al year:		*Pounds.*				*Per cent.*
1908	3 cents per pound plus 10 per cent.	2,661,198	$837,742	$163,610	$0.315	19.53
1909	.....do.....	1,287,812	309,513	69,585	.240	22.48
1910	.....do.....	2,164,444	424,297	107,363	.196	25.30
1911	.....do.....	4,096,265	658,999	188,787	.161	28.65
1912	.....do.....	3,178,122	525,519	147,895	.165	28.14
1913	.....do.....	5,170,463	795,290	234,642	.154	29.50
1914	.....do.....	1,177,745	183,903	53,722	.156	29.21
	15 per cent	4,648,498	712,306	106,845	.153	15.00
1915	.....do.....	4,578,947	755,927	113,389	.165	15.00
1916	.....do.....	4,009,950	674,728	101,209	.168	15.00
1917	.....do.....	3,060,535	598,821	89,823	.196	15.00
1918	.....do.....	1,416,543	363,755	54,563	.257	15.00
endar year:						
1918	.....do.....	647,545	188,566	28,285	.291	15.00
1919	.....do.....	251,588	100,226	15,034	.398	15.00
1920	.....do.....	641,663	124,280	18,642	.194	15.00
1921	.....do.....	951,472	152,662	22,899	.160	15.00

IMPORTS FOR CONSUMPTION—REVENUE—continued.

Photographic paper, albuminized or sensitized or otherwise coated.

Year	Rate of duty	Quantity	Value	Duty collected	Value per unit of quantity	Actual and computed ad valorem rate
Fiscal year—		*Pounds.*				*Per c[illegible]*
[illegible]	[illegible] per cent		[illegible]	[illegible]		
[illegible]	Do.		[illegible]	[illegible]		
[illegible]	Do.		[illegible]	[illegible]		
[illegible]	Do.		[illegible]	[illegible]		
[illegible]	Do.		[illegible]	[illegible]		
[illegible]	Do.		[illegible]	[illegible]		
[illegible]	Do.		[illegible]	[illegible]		
	[illegible] per cent		[illegible]	[illegible]		
[illegible]	Do.		[illegible]	[illegible]		
[illegible]	Do.		[illegible]	[illegible]		
[illegible]	Do.		[illegible]	[illegible]		
[illegible]	Do.		[illegible]	[illegible]		
Calendar year—						
[illegible]	Do.		[illegible]	[illegible]		
[illegible]	Do.	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	Do.	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	Do.	[illegible]	[illegible]	[illegible]	[illegible]	

RATES OF DUTY.

Photographic paper.

Act of—	Par.	Tariff classification or description	Rate of duty
[illegible]	[illegible]	[illegible]	[illegible] per cent ad val[illegible]
[illegible]	[illegible]	[illegible]	[illegible] per cent ad val[illegible]
[illegible]	[illegible]	[illegible]	[illegible] cents per pound [illegible] 1[illegible] per cent ad v[illegible]
		[illegible]	[illegible] per cent ad val[illegible]
[illegible]	[illegible]	[illegible]	Do.
		[illegible]	[illegible] cents per pound [illegible] 1[illegible] per cent ad v[illegible]
[illegible]	[illegible]	[illegible]	[illegible] per cent ad val[illegible]
		[illegible]	[illegible] per cent ad val[illegible]

CIGARETTE PAPER.

GENERAL INFORMATION.

[illegible] cigarette-book covers [illegible] and cigarette paper [illegible] in volume and value.

DESCRIPTION AND USES.

Cigarette paper [illegible] used in making cigarette[illegible] [illegible] the greater [illegible] [illegible] white paper.

It is suggested that cigarette paper, along with cigarette book[illegible] [illegible] from its present location in [illegible] [illegible] to the paper schedule.

DOMESTIC PRODUCTION.

MATERIALS.

The pulp used in manufacturing cigarette paper is ordinarily made rom flax and hemp products. These are secured principally from orthern France and Belgium, also England, Germany, and Holland. ussia is normally one of the most important flax-producing areas f the world, but at the present time is of no importance as a source f flax for the cigarette-paper mills of other countries.

In the past it has been easier for European mills, which are located ainly in Austria and northern France, than for American mills to ecure these raw materials for cigarette-paper making. The reason r this is the greater proximity of the European mills to the source f supply. Hemp sailcloth and cordage have been much used as aw materials by these mills. So far the United States has been rced to import the greater part of its materials for cigarette paper. t is possible, however, that the seed flax of the northwestern part f the United States may be developed to provide adequate domestic upplies of pulp for cigarette paper.

The only other material used in any quantity is a fine grade of halk, usually in the form of calcium carbonate or magnesium carbonate. This is used as a filler. The greater part of that consumed n cigarette-paper making in the United States comes from England, hich has large supplies of chalk of a high quality.

EQUIPMENT.

The cigarette-paper manufacturing industry of the United States s so limited in extent that very little machinery is used, compared ith the quantities of machinery engaged in making other kinds of aper. What is used is mainly of domestic production. Wires and andy rolls, however, used on cigarette-paper machines are largely mported from France and England, as manufacturers say it is practically impossible to get them properly made in the United States.

METHODS OF PRODUCTION.

The processes of cigarette-paper manufacture are in a general way he same as those of making other kinds of paper. (See Tariff nformation Survey M–2 on Printing Paper.) The linen or hemp is laced in the beater after being reduced to "half-stuff" by means of oiling. In the beater the individual fibers are separated, filler in he form of chalk is added, and the whole mass beaten until it is horoughly homogeneous. The skill shown by the men tending the eaters is one of the principal factors in cigarette-paper manufacture. The superiority of the foreign over the domestic brand of cigarette aper is due largely to the greater amount of time and energy that oreign manufacturers give to making the pulp the right consistency or the paper machine.

The paper machine used is the Fourdrinier model, designed especially for making cigarette paper, usually with imported wires and andy rolls.

HISTORY OF THE INDUSTRY.

Up to 1914 no cigarette paper in bobbins was manufactured in the United States. The only kinds manufactured here were the cheaper grades formerly given away in small books to encourage the sale of well-known brands of smoking tobacco. The imports of cigarette paper amount to very little. In the fall of 1914, when it looked as if importation might be stopped by war conditions, certain American paper manufacturers undertook to produce cigarette paper. New buildings and machinery were installed. Costly experiments had to be made on account of the lack of familiarity with the processes involved.

DOMESTIC PRODUCTION AND CONSUMPTION.

According to Lockwood's Directory of the Paper and Allied Trades, five concerns were equipped for making cigarette paper in 1920. Apparently, however, only one of these companies, located in Massachusetts, produces it in quantities of commercial importance.

The following tabulation shows the estimated annual production of cigarette paper in the United States from 1918 to 1920:

Year.	Amount.	Value.
	Pounds.	
1918	2,033,000	$2,000,000
1919	1,620,000	1,600,000
1920	2,219,000	2,200,000

This production represents roughly from one-fifth to one-third of the total cigarette paper used in the United States, the remainder being imported.

DOMESTIC EXPORTS.

Exports of cigarette paper from the United States are practically negligible.

FOREIGN PRODUCTION.

Figures for the production of cigarette paper in other countries are not obtainable. Southwestern Europe, particularly France, is the most important cigarette-paper producing region, from the point of view of competition with the United States.

IMPORTS.

Imports of cigarette paper in rolls amount to about 4,000,000 pounds per year, representing two-thirds or more of domestic consumption and from two to four times domestic production.

Statistics for the quantities of cigarette paper imported by countries are not available. Beginning with 1913, however, figures for the value of cigarette books, covers, and paper imported into the United States by countries of origin have been compiled.

The value of imports of cigarette books, covers, and papers increased steadily from $706,830 in the fiscal year 1913 to $8,830,018 in the calendar year 1918. Since 1918 each year has witnessed a successive decline in value. In the calendar year 1920 imports

nounted to $4,723,995, and in 1921 to $3,579,643. How much at all) the actual quantity of cigarette paper imported into nited States increased between 1913 and 1918 and declined after 18 is a matter of conjecture. Both the pre-war and the present ices of imported cigarette paper were so much lower than the ar price, that the figures for value of imports do not necessarily ove definitely that the quantity of imports increased during the ar.

France before the war was by all odds our most important source cigarette paper and has held her supremacy. Prior to the war, ustria was also of considerable importance, but since 1915 has unted for little in our import trade in cigarette paper. Italy, ortugal, Spain, and England have sent small amounts, and even pan in certain years has sent shipments amounting in value to veral thousands of dollars. However, since Austria ceased to be a urce of supply for the United States, an average of more than 95 r cent of our imports of cigarette paper has come from France.

PRICES.

The prices quoted below refer to the highest grade of linen cigarette per in bobbins for machine-made cigarettes.

Prior to the war foreign cigarette paper sold in this country for out 20 cents per pound duty paid. During the war it reached as gh as $2 per pound in France or $3 per pound duty paid in the nited States. According to American manufacturers, it was uoted in August, 1921, at about 35 cents per pound in England and rance or somewhat less than 60 cents per pound duty paid in the nited States, with Germany, Italy, and Japan offering it even eaper, in fact at almost any price obtainable.

According to the trade, domestic cigarette paper was quoted in ugust, 1921, at about 70 cents per pound and never at any time as sold above $1 per pound.

TARIFF HISTORY.

Cigarette paper bore a duty of 70 per cent ad valorem under the ct of 1890, 50 per cent under the act of 1894, 60 per cent under the cts of 1897 and 1909 and bears a duty of 50 per cent under the act f 1913.

COMPETITIVE CONDITIONS.

It has been pointed out that imports of cigarette paper are from wo to four times domestic production, and that our export trade cigarette paper is practically nonexistent. Only one company the United States manufactures cigarette paper in amounts f commercial importance. It is fairly patent that the domestic igarette-paper industry does not compete on even terms with the dustry abroad.

Although certain American manufacturers assert that American igarette paper is fully equal in quality to French or other imported igarette paper, they run counter to an opinion which maintains strong hold among manufacturers of cigarettes in the United States. large tobacco concern states:

rt of our materials. The price of them, particularly linen fiber, s been higher to the American consumer than in Europe, where ey are produced, owing to higher transportation, embargoes, and her factors. There is little question also that paper-mill wages e much lower in France and other European countries than in the nited States. Manufacturers point out that wages are a much more portant factor in the total cost of production of expensive papers e cigarette paper than in that of cheap papers.

Exact and detailed figures for comparative costs of cigarette-per production here and abroad are not available.

STATISTICAL TABLES.

IMPORTS BY COUNTRIES.

Cigarette books, covers, and paper.

Imported from—	Fiscal year.					
	1913	1914	1915	1916	1917	1918
tria-Hungary	$120,318	$187,625	$135,235	$460	$245	
nce	554,589	688,424	784,039	1,146,523	3,737,635	$8,719,190
y	403	823	38,949	18,233	48,953	32,595
tugal			260	10,150	5,530	5,829
in	20,787	10,498	43,447	15,599	31,190	27,429
gland	1	431	11,490	43,879	62,276	2,782
an	38	924	1,720	22	312	7,697
other countries	10,694	18,646	6,343	12,933	7,512	12,756
Total	706,830	907,371	1,021,483	1,247,799	3,893,653	8,808,278

Imported from—	Calendar year.			
	1918	1919	1920	1921
stria-Hungary		$4,795		
nce	$8,628,700	5,857,972	$4,593,189	$3,406,996
ly	132,324	169,713	47,516	36,154
tugal	14,046	30,081	16,021	22,032
ain	12,905	56,019	25,992	57,361
gland	3,913	8	20,939	28,785
an	16,153	130	587	10,207
other countries	21,977	5,341	19,751	18,108
Total	8,830,018	6,124,059	4,723,995	3,579,643

IMPORTS FOR CONSUMPTION—REVENUE.

garette books, cigarette-book covers, and cigarette paper in all forms, except cork paper (acts of 1909 and 1913).

UNDER GENERAL TARIFF.

Year.	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
scal year:				*Per cent.*
1910	60 per cent	$76,478	$45,886	60
1911	do	570,439	342,263	60
1912	do	600,972	360,583	60
1913	do	679,147	407,488	60
1914	do	208,932	125,359	60
	50 per cent	586,497	293,248	50
1915	do	849,217	424,608	50
1916	do	1,110,251	555,125	50
1917	do	2,962,015	1,481,007	50
1918	do	5,285,529	2,642,764	50
lendar year:				
1918	do	6,721,945	3,360,973	50
1919	do	7,721,695	3,860,848	50
1920	do	4,691,967	2,345,984	50
1921	do	4,387,968	2,193,984	50

IMPORTS FOR CONSUMPTION—REVENUE—continued.

Cigarette books, cigarette-book covers, and cigarette paper in all forms, except cork pa
(acts of 1909 and 1913)—Continued.

FROM CUBA (RECIPROCITY TREATY, DEC. 27, 1903).

Year.	Rate of duty.	Value.	Duty collected.	Actual computed ad valorem rate.
Fiscal year:				*Per ce*
1910	60 per cent less 20 per cent	$5	$2	
1911	do	4	1	
1913	do	59	28	
1915	50 per cent less 20 per cent	15	6	
1916	do	1,004	401	
1917	do	209	83	
1918	do	55	22	
Calendar year:				
1918	do	589	236	
1919	do	407	163	
1920	do	97	39	
1921	do	23	9	

DUTY REMITTED ON CIGARETTE BOOKS, CIGARETTE PAPER, ETC.

Fiscal year:				
1910	Sec. 23, act of Aug. 5, 1909	$30,504		
1911	do	28,068		
1912	do	23,457		
1913	do	30,392		
1914	Sec. IV, M, act of Oct. 3, 1913	35,729		
1915	do	30,856		
1916	do	76,649		
1917	do	403,207		
1918	do	246,727		
Calendar year:				
1918	do	109,254		
1919	do	1,874		
1920				
1921				

RATES OF DUTY.

Cigarette paper.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1890	468	* * * cigarette books, cigarette-book covers, * * * and cigarette paper in all forms.	70 per cent ad valor
1894	359	do	50 per cent ad valor
1897	459	do	60 per cent ad valor
1909	475	do	Do.
1913	381	* * * cigarette books, cigarette-book covers, * * * and cigarette paper in all forms, except cork paper.	50 per cent ad valor

COURT AND TREASURY DECISIONS.

Paper differing from cigarette paper by containing less magnes
was held to come within the provision in paragraph 459 in the a
of 1897 for cigarette paper in all forms. The court said that on
it appears an article is cigarette paper in fact its classification c
not be changed by devoting it to another use; it is still cigaret
paper. (Hygeia Antiseptic Toothpick Co. *v.* United States, 1 (
Cust. Appls., 497 of 1911.)

PAPIER-MÂCHÉ.

GENERAL INFORMATION.

Act of 1913, paragraph 369: * * * manufactures of * * * papier-mâché, * * or of which these substances or any of them is the component material of ief value, not specially provided for in this section, 25 per centum ad valorem * *.

DESCRIPTION AND USES.

Papier-mâché is a hard, tough and plastic substance, generally ade from pulped waste paper, mixed with mineral matter such as ina clay, and rosin, or from sheets of paper glued and pressed gether. It is moulded when moist by steel dies into architectural naments, lacquered boxes, trays, durable utensils, dress forms, indow dummies, signs, figures, toy animals, other kinds of toys, nd other articles.

As it is made from the same general sort of material as paper, it ight be well to transfer it to Schedule M, perhaps naming it in connection with filter masse (par. 321) and indurated fiber ware (which now in the sundries schedule, par. 355). These three commodities re similar in that they are wares made through the moulding of pulp r fiber.

DOMESTIC PRODUCTION.

Materials.—Papier-mâché is made out of waste paper, cotton nters, or rags colored with aniline dyes. Glue, paste, rosin, and ther sizing materials, oil, clay, and the like are also used. These aterials are obtained principally in the United States.

Equipment.—The machinery used is made principally in the Jnited States.

Methods of production.—One firm reports that it makes papier-âché articles by pressing paper pulp or softened paper into molds, ither by machinery or by hand. So-called papier-mâché board, sed as an intermediary material in the manufacture of papier-âché objects is made on a cylinder paper machine, the same as rdinary box board. (See Tariff Information Survey M–1, on Building Paper, Paper Boards, and Filter Masse.)

Amount of output.—One estimate places the average annual domestic production at 5,000 tons, valued at $250,000.

Domestic exports.—No figures are available.

IMPORTS.

A manufacturer in the United States states that papier-mâché is mported from Germany, France, and Austria-Hungary. Imports y countries are not separately compiled by the Department of ommerce. The following table shows imports for consumption rom 1908 to 1921:

IMPORTS FOR CONSUMPTION—REVENUE.

Manufactures of papier-mâché.

Year.	Rate of duty.	Value.	Duty collected.	Actual an computed ad valorem rate.
Fiscal year:				*Per cent*
1908	35 per cent	$22,235	$7,782	
1909	do	17,834	6,242	
1910	do	22,040	7,714	
1911	do	25,338	8,868	
1912	do	20,492	7,172	
1913	do	25,934	9,076	
1914	do	4,278	1,497	
	25 per cent	26,382	6,595	
1915	do	19,851	4,962	
1916	do	13,697	3,424	
1917	do	9,812	2,453	
1918	do	25,679	6,419	
Calendar year:				
1918	do	18,978	4,745	
1919	do	8,737	2,184	
1920	do	33,024	8,256	
1921	do	42,460	10,615	

TARIFF HISTORY.

Manufactures of papier-mâché were dutiable at 35 per cent a valorem under the act of 1890 (par. 461); 30 per cent ad valorem under the act of 1894 (par. 353); 35 per cent ad valorem under the act of 1897 (par. 450); and 35 per cent ad valorem under the act of 1909 (par. 464). They are dutiable at 25 per cent ad valorem under the act of 1913 (par. 369).

COMPETITIVE CONDITIONS.

A manufacturer in the United States states that in many instances papier-mâché has recently been imported into the United States at a price less than the American cost of production.

Using the rough estimate of $250,000 as the average annual value of papier-mâché production in the United States, imports constitute in the neighborhood of one-tenth of domestic production.

RATES OF DUTY.

Papier mâché.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1883	472	Papier-mâché, manufactures, articles, and wares of	30 per cent ad valorem
1890	461	Manufactures of * * * papier-mâché * * * not specially provided for in this Act.	35 per cent ad valorem
1894	353	Manufactures of * * * papier-mâché * * * not specially provided for in this Act.	30 per cent ad valorem
1897	450	Manufactures of * * * papier-mâché * * * not specially provided for in this Act, * * *	35 per cent ad valorem
1909	464	Manufactures of * * * papier-mâché * * * not specially provided for * * *	Do.
1913	369	* * * Manufactures of * * * papier-mâché, * * * not specially provided for * * *	25 per cent ad valorem

PAPER, NOT SPECIALLY PROVIDED FOR.

General Information.

Act of 1913, paragraph 332: * * * all papers * * * not specially provided r in this section, 25 per centum ad valorem.

DESCRIPTION.

The paper included under all other papers consists of a great ariety of specialties not separately named in the tariff act. A con- iderable part of the imports of blotting and hanging paper probably nter as paper n. s. p. f.

PRODUCTION AND EXPORTS.

Production and export figures of "all other" paper are compiled n bases differing so widely from that of the imports of "all other" aper and from each other that no valid comparison between any wo of the three sets of figures couid possibly be made.

IMPORTS.

The following tables show the imports for consumption of all ther paper from 1908 to 1921.

Statistical Tables.

IMPORTS FOR CONSUMPTION—REVENUE.

All other papers, n. s. p. f.

UNDER GENERAL TARIFF.

Year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
Fiscal year:		*Pounds.*				*Per cent.*
1908	25 per cent		$1,586,692	$396,673		25
1909	do		2,234,604	558,651		25
1910	do		174,229	43,557		25
	30 per cent		543,156	162,946		30
1911	do		353,312	105,993		30
1912	do		277,574	83,272		30
1913	do		306,971	92,091		30
1914	do		58,766	17,629		30
	25 per cent		214,052	53,513		25
1915	do		161,301	40,325		25
1916	do		87,462	21,865		25
1917	do		83,636	20,909		25
1918	do		52,106	13,026		25
Calendar year:						
1918	do		31,115	7,779		25
1919	do	23,373	14,916	3,729	$0.638	25
1920	do	431,444	86,915	21,729	.201	25
1921	do	518,893	62,216	15,554	.119	25

IMPORTS FOR CONSUMPTION—REVENUE—continued.

All other papers, n. s. p. f.—Continued.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
FROM PHILIPPINE ISLANDS (ACT OF MAR. 3, 1905).						
Fiscal year:						*Per cent.*
1908	75 per cent of 25 per cent		$3			
FROM CUBA (RECIPROCITY TREATY, DEC. 27, 1903).						
Fiscal year:						
1908	25 per cent less 20 per cent		$5	$1		20
1909	do		14	2		20
1914	do		15	3		20
1915	do		11	2		20
1918	do		34	6		20
DUTY REMITTED ON ABOVE.						
Fiscal year:						
1908	Sec. 15, act of July 24, 1897		$8,153			
1909	do		2,961			
1910	Sec. 23, act of Aug. 5, 1909		318			
	For use of foreign diplomatic officers		9			
1914	Sec. IV, J5, act of Oct. 3, 1913		16			
1916	Sec. IV, M, act of Oct. 3, 1913		189			
1917	do		175			
1918	For use of the United States		10			

TARIFF HISTORY.

Following are the rates of duty on paper n. s. p. f. under the tari acts from 1883 to 1913:

RATES OF DUTY.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1883	392	* * * all other paper not specially enumerated or provided for in this act.	25 per cent ad valore
1890	422	* * * all other paper not specially provided for in this act	Do.
1894	310	do	20 per cent ad valore
1897	402	do	25 per cent ad valore
1909	415	* * * paper not specially provided for in this section	30 per cent ad valore
1913	332	* * * all papers * * * not specially provided for in this section.	25 per cent ad valore

CELLANEOUS MANUFACTURES OF PAPER.

GENERAL INFORMATION.

ACT OF 1913.

* * * manufactures of paper or of which paper is the component
if **value, not** specially provided for in this section, 25 per centum ad

4. * * * bags, envelopes, and all other articles composed wholly
e of any of the foregoing papers, not specially provided for in this sec-
xes of paper or papier-mâché or wood covered with any of the foregoing
red or lined with cotton or other vegetable fiber, 35 per centum ad

32. Papers or cardboard, cut, die cut, or stamped into designs or shapes,
s, monograms, lace, borders, or other forms, * * * 25 per cent ad

DESCRIPTION.

ve items include various miscellaneous manufactures of paper board or cardboard. The kinds of paper referred to ph 324 as the "foregoing papers" are surface-coated papers, apers, decorated papers, cloth-lined papers (all of the fore- cribed elsewhere in this survey), and parchment and imita- hment papers (described in Tariff Information Survey

is no separate provision for paper bags and paper boxes, n the specialties described above. Inasmuch as paper bags es are among the most important staple articles made of the United States, it would seem desirable to name them lly in the tariff law. Probably some such wording as "bags, d wholly or in chief value of paper, n. s. p. f.; boxes composed or in chief value of paper, papier-mâché, or paper board, f.," would be appropriate.

DOMESTIC PRODUCTION.

ppended table (p. 44) shows the production of paper bags and nd paper boxes in the United States in census years from 1904 9. The boxes produced by the establishments reporting are nd metal-edged boxes, made of paper, newsboard, or cardboard, ntainers for confectionery, millinery, small cigars, cigarettes, ther articles. Cartons, folding boxes, mailing cases, shipping s, charlotte-russe boxes, holders, and bonbon cups are among rticles reported. Although paper and wood pulp are the ipal materials, the products also include lithographed, lacquered, lain tin boxes, tea caddies and canisters of tin, and fancy boxes ood covered with cretonne, silk, tapestry, and similar textiles. nown in the table more than 98 per cent of the 1914 production ncy and paper boxes consisted of paper boxes and cartons.

DOMESTIC EXPORTS.

xports of paper bags from the United States increased from 6,799 in the fiscal year 1913 to $2,593,459 in the calendar year 0, but fell to $846,909 in the calendar year 1921. Cuba is much most important market. Canada, British South Africa, Mexico, d Panama are next in importance. In 1914 exports amounted to s than 3 per cent and in 1919 to slightly more than 3 per cent of mestic production.

Paper boxes and cartons have been exported in nearly the same alues as paper bags, increasing from $553,021 in the fiscal year 1913

[illegible] 36 [illegible] 1930. [illegible] they amounted to [illegible] the most important market, receiving from [illegible] of the exports that year from [illegible] in 1930. Cuba, [illegible] Japan, [illegible] Kingdom import considerable quantities [illegible] paper hangings.

[illegible] imports of paper hangings amounted to less [illegible] of the domestic production.

Notes

[illegible] paper hangings other than fancy and [illegible] with special kinds of paper, are not [illegible] separately [illegible] imports for consumption [illegible] in the tariff law.

Tariff History

[illegible] duties on manufactures of paper [illegible] are shown at the [illegible]

[illegible]

[illegible]

[illegible]

[illegible]

IMPORTS FOR CONSUMPTION—REVENUE.

s, envelopes, and all other articles composed wholly or in chief value of surface-coated, rchment, or similar papers, and all boxes of paper or wood covered with any of the regoing paper (act of 1909).

Fiscal year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
	5 cents per pound plus 30 per cent.	478,673	$81,267	$48,314	$0.170	59.45
	do	430,501	97,172	50,676	.226	52.36
	do	485,642	121,869	60,842	.251	49.92
	do	360,822	96,626	47,028	.268	48.67
	do	81,863	26,670	12,094	.326	45.35

s, envelopes, and all other articles composed wholly or in chief value of surface-coated parchment, or similar papers (act of 1913).

UNDER GENERAL TARIFF.

Year.	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
al year:				*Per cent.*
914	35 per cent	$65,870	$23,054	35
915	do	28,296	9,900	35
916	do	15,853	5,548	35
917	do	9,622	3,367	35
918	do	5,161	1,806	35
dar year:				
918	do	6,566	2,298	35
919	do	11,582	4,054	35
920	do	37,877	13,257	35
921	do	38,945	13,631	35

FROM CUBA (RECIPROCITY TREATY, DEC. 27, 1903).

al year:				
915	35 per cent less 20 per cent	$8	$2	28
dar year:				
921	do	26	7	28

FROM PHILIPPINE ISLANDS.

dar year:				
921	Free	$164		

Paper boxes.

NCY BOXES, MADE OF PAPER, OR OF WHICH PAPER IS THE COMPONENT MATERIAL OF CHIEF VALUE, OR COVERED WITH SURFACE-COATED PAPER (ACT OF 1897).

Year.	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
al year:				*Per cent.*
908	45 per cent	$103,132	$46,409	45
909	do	83,766	37,695	45

IMPORTS FOR CONSUMPTION—REVENUE—continued.

Paper items—Continued.

BOXES MADE WHOLLY OR IN CHIEF VALUE OF PAPER OR PAPIER-MÂCHÉ, COVERED WITH SURFACE-COATED PAPER, ACT OF [illegible].

Year.	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
[illegible]				*Per cent.*
[illegible]	[illegible] per cent.	[illegible]	[illegible]	45
[illegible]	do.	[illegible]	[illegible]	45
[illegible]	do.	[illegible]	[illegible]	45
[illegible]	do.	[illegible]	[illegible]	45
[illegible]	do.	[illegible]	[illegible]	45

BOXES [illegible] WHOLLY OR IN CHIEF VALUE OF PAPER OR PAPIER-MÂCHÉ, COVERED WITH SURFACE-COATED [illegible] OR LINED WITH COTTON OR [illegible], ACT OF [illegible].

Year.	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
[illegible]				
[illegible]	[illegible] per cent.	[illegible]	[illegible]	[illegible]
[illegible]	do.	[illegible]	[illegible]	[illegible]
[illegible]	do.	[illegible]	[illegible]	[illegible]
[illegible]	do.	[illegible]	[illegible]	[illegible]
[illegible]				
[illegible]	do.	[illegible]	[illegible]	[illegible]
[illegible]	do.	[illegible]	[illegible]	[illegible]
[illegible]	do.	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible] per cent and [illegible] the United States	[illegible]	[illegible]	[illegible]

[illegible]

Year.	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
[illegible]				*Per cent.*
[illegible]	[illegible] per cent.	[illegible]	[illegible]	[illegible]
[illegible]	do.	[illegible]	[illegible]	[illegible]
[illegible]	do.	[illegible]	[illegible]	[illegible]
[illegible]	do.	[illegible]	[illegible]	[illegible]

[illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible] per cent	[illegible]	[illegible]	[illegible]

[illegible] SHAPES [illegible]

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

IMPORTS FOR CONSUMPTION—REVENUE—continued.

Other manufactures of paper, or of which paper is the component material of chief value, n. s. p. f.

UNDER GENERAL TARIFF.

Year.	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
l year:				
908	35 per cent	$1,011,191	$353,916	35
909	do	814,329	285,015	35
910	do	1,052,474	368,366	35
911	do	1,014,380	355,033	35
912	do	807,087	282,480	35
913	do	929,058	325,170	35
914	do	250,404	87,641	35
	25 per cent	766,318	191,579	25
915	do	920,434	230,108	25
916	do	711,087	177,771	25
917	do	308,596	77,149	25
918	do	229,106	57,276	25
ıdar year:				
918	do	127,728	31,932	25
919	do	265,220	66,305	25
920	do	551,423	137,856	25
921	do	777,211	194,303	25

FROM PHILIPPINE ISLANDS (ACTS OF MAR. 3, 1905, AUG. 5, 1909, AND OCT. 3, 1913).

				Per cent.
al year:				
908	75 per cent of 35 per cent	$3		
909	do	10	$2	26.25
910	Free	12		
916	do	2		
917	do	541		
918	do	5		
ndar year:				
918	do	5		
919	do	283		
920	do	1,787		
921	do	2		

FROM CUBA (RECIPROCITY TREATY, DEC. 27, 1903).

				Per cent.
al year:				
1908	35 per cent less 20 per cent	$159	$44	28.00
1909	do	25	7	28.00
1910	do	5	1	28.00
1911	do	3		
1914	25 per cent less 20 per cent	101	20	20.00
1915	do	9	1	20.00
1917	do	75	15	20.00
1918	do	72	14	20.00
endar year:				
1918	do	66	13	20.00
1919	do	110	22	20.00
1920	do	108	22	20.00
1921	do	575	115	20.00

DUTY REMITTED ON ABOVE.

cal year:				
1910	For use of foreign diplomatic officers	$3		
1914	do	22		
	For use of the United States	45		
1915	For use of foreign diplomatic officers	143		
lendar year:				
1921	For construction and equipment of vessels	1,100		

DOMESTIC EXPORTS.

Paper bags.

Exported to—	Fiscal year.					
	1913	1914	1915	1916	1917	1918
Canada	$57,281	$51,472	$50,520	$59,032	$99,395	$108,29
Panama	29,354	30,901	34,775	41,904	71,670	43,52
Mexico	18,493	9,814	9,241	23,821	45,523	78,07
Cuba	162,742	166,182	208,142	247,786	672,784	552,88
Australia	39,402	41,694	32,113	36,643	64,819	14,41
British South Africa	45,007	20,706	19,693	33,913	97,477	86,51
All other countries	84,520	101,306	95,468	131,878	202,997	222,09
Total	436,799	422,075	449,952	574,977	1,254,605	1,106,40

Exported to—	Calendar year.			
	1918	1919	1920	1921
Canada	$88,140	$76,996	$215,715	$105,88
Panama	36,476	34,398	49,675	50,41
Mexico	86,336	177,446	117,404	156,28
Cuba	365,777	781,226	1,588,951	193,55
Australia	15,015	20,691	8,744	6,69
British South Africa	82,001	201,632	189,312	118,16
All other countries	210,670	273,984	423,658	215,89
Total	884,415	1,566,373	2,593,459	846,90

Paper boxes and cartons.

Exported to—	Fiscal year.					
	1913	1914	1915	1916	1917	1918
France	$262	$364	$998	$64,891	$889	$2,84
United Kingdom	10,402	11,363	10,975	88,194	29,297	9,45
Canada	451,769	359,257	295,742	368,459	765,523	676,42
Mexico	11,510	3,794	3,460	11,302	12,074	30,36
Jamaica	16,044	20,035	13,405	22,826	34,341	23,28
Cuba	11,136	12,825	9,143	23,105	59,063	48,92
British India		832	463	268	7,275	16,77
British South Africa	1,145	370	619	4,227	29,134	33,17
All other countries	50,757	50,619	55,800	99,032	119,533	133,41
Total	553,021	459,459	390,605	682,304	1,057,129	974,65

Exported to—	Calendar year.			
	1918	1919	1920	1921
France	$2,800	$724	$3,804	$1,08
United Kingdom	2,736	74,329	100,468	129,52
Canada	764,446	871,748	1,422,250	800,54
Mexico	18,641	29,924	36,531	47,86
Jamaica	26,652	33,924	14,613	1,92
Cuba	49,260	85,046	167,535	86,25
British India	28,287	11,438	170,937	63,26
British South Africa	61,881	46,826	63,427	19,25
All other countries	124,710	197,971	258,031	151,13
Total	1,079,413	1,351,930	2,237,596	1,300,85

RATES OF DUTY.

Miscellaneous manufactures of paper.

Par.	Tariff classification or description.	Rate of duty.
388	Paper, manufactures of, or of which paper is a component material, not specially enumerated or provided for in this act	15 per cent ad valorem.
425	Manufactures of paper, or of which paper is the component material of chief value, not specially provided for in this act.	35 per cent ad valorem.
313	.....do.....	30 per cent ad valorem.
407	.....do.....	35 per cent ad valorem.
405	All fancy boxes made of paper or of which paper is the component material of chief value, or if covered with surface-coated paper.	45 per cent ad valorem.
420	Manufactures of paper, or of which paper is the component material of chief value, not specially provided for in this section.	35 per cent ad valorem.
111	* * * All boxes of paper or wood covered with any of the foregoing paper.	5 cents per pound and 30 per cent ad valorem.
18	All boxes made wholly or in chief value of paper or papier-mâché, if covered with surface-coated paper.	45 per cent ad valorem.
11	* * * bags, envelopes, * * * and all other articles composed wholly or in chief value of any of the forecoing papers, not specially provided for in this section. * * *	5 cents per pound and 30 per cent ad valorem.
5	* * * paper embossed, or cut, diecut, or stamped into designs, or shapes, such as initials, monograms, lace, borders, bands, strips, or other forms, or cut or shaped for boxes, plain or printed, but not lithographed, and not specially provided for in this section, * * *.	35 per cent ad valorem.
2	* * * manufactures of paper or of which paper is the component material of chief value, not specially provided for in this section.	25 per cent ad valorem.
	* * * all boxes of paper or papier-mâché or wood covered with any of the foregoing papers or covered or lined with cotton or other vegetable fiber.	35 per cent ad valorem.
	* * * bags, envelopes, and all other articles composed wholly or in chief value of any of the foregoing papers, not specially provided for in this section, * * *.	Do.
	Papers or cardboard, cut, die cut, or stamped into designs or shapes, such as initials, monograms, lace, borders, or other forms, * * *.	25 per cent ad valorem

COURT AND TREASURY DECISIONS.

and manufactures of paper have been distinguished in cases. In a Supreme Court case under the act of 1883, ted, colored, and embossed to imitate leather, or coated to imitate velvet, were held not to be manufactures of e court declared that the manipulation or treatment of paper in the completed condition in which produced at a by mere surface coating and processes not changing its only increase the uses to which such paper might be put cause the paper to cease to be paper and become a manu- aper. (Dejonge *v.* Magone, 159 U. S. 562.)

tute a material paper it is not necessary that the machine nanufacture shall be known as a paper-making machine. material shall contain glue, alum, and clay. (Germania o. *v.* United States, 2 Ct. Cust. Appls., 55.)

er, stamped by a single operation into shapes with lace- known as tops or doilies, and used to put on top of candy, fruit, etc., or under finger bowls, was held not to to be paper and become a manufacture of paper under 97. (Hamilton *v.* United States, 167 Fed. [illegible] ates *v.* Hensel, 152 Fed. 578, of 1907, holding lace paper s, tops, etc., some printed with the names and addresses and used in packing confectionery, etc., to be dutiable res of paper rather than as paper or as printed matter t.)

Paper bags with incidental printing thereon were held to be manufactures of paper within paragraph 407 of the act of 1897. (Kraut *v.* United States, 130 Fed. 392.)

So-called duplex lithographic transfer paper used in transferring decalcomania designs to pottery, and produced by pasting together two sheets of paper, one coated with a gummy substance and the other uncoated, was classified as paper rather than as manufactures of paper under the act of 1897. (Drakenfeld *v.* United States, 167 Fed. 798.) For other decisions upon such paper see "Surface-coated paper."

Metal-coated paper cut into strips, each about 2½ feet long and one-fourth of an inch wide, embossed with a small ornamental design and with the letters "P" and "T" left attached to a very narrow border at each end for convenience in handling, used for fancy wrapping around candy boxes or similar packages, are not merely strips of paper. In other words, strips of paper made up so that nothing remains to be done to them before using but to detach their ends were held to be so far advanced in condition that they were no longer simply paper, but had become manufactures of paper. (Kupfer Bros. *v.* United States, 7 Ct. Cust. Appls. 86, of 1916.)

Figures of women wearing fashionable clothes, drawn on cardboard with pen and ink or pencil and colored with water colors, designed to illustrate the clothes, were held to be exempt from duty under paragraph 652 of the act of 1913 as "original drawings and sketches in pen and ink or pencil and water colors" rather than dutiable as manufactures of paper under paragraph 332. Similar cards, composed in large part of actual dress goods fabrics and other similar cards representing the interiors of rooms exhibiting designs of drapery, pictures of wall paper and linoleum designs, bolts of dress or upholstery fabrics, a couch with figured covering, and similar articles were held to be manufactures of paper and not exempt from duty as drawings or as works of art. (Macloughlin *v.* United States, 11 Ct. Cust. Appls. —, of 1920; T. D. 38261.)

The phrase "covered with surface-coated paper" in paragraph 405 of the act of 1897 was limited to fancy boxes covered with such paper, and plain ordinary pill boxes covered with surface paper were held not to be dutiable as fancy paper boxes. (G. A. 4182, T. D. 19488, of 1898.) But boxes composed of paper board and paper trimmed and ornamented with shells were held dutiable as fancy paper boxes under that act. (G. A. 4212, T. D. 19657, of 1898.) This decision, however, was modified upon evidence showing that similarly constituted boxes were in chief value of shells. They were accordingly held dutiable as manufactures of shell. (Abstract 3657, T. D. 25772, of 1904.) Fancy boxes made of papier-mâché were held not to come within the provision for fancy paper boxes because they were not made of paper. (G. A. 4973, T. D. 23197, of 1901.)

Paper boxes covered with embossed surface-coated paper were held dutiable under paragraph 411 of the act of 1909 and not under paragraph 418 by application of the rule that where two or more rates are applicable to any article it shall pay duty at the highest of such rates. (Woolworth *v.* United States, 1 Ct. Cust. Appls. 120, of 1910.)

Boxes covered with surface-coated paper and lined with silk, silk chief value, were held dutiable under paragraph 328 of the act of 1913 as against the Government's contention that they were dutiable as manufactures of silk under paragraph 318. (Abstract 39582, of

taken, T. D. 36524, affirmed in United States *v.* Park
pls. 422, of 1917; rehearing denied, Abstract 39804.)
es composed of cardboard and paper covered with
ınd lined with silk and cotton cloth (satin) with metal
ttons were held dutiable under the provision in para-
ıe act of 1913 for boxes of paper covered with cotton.
)8, of 1916.) Jewelry boxes composed of wood or
vered with cotton and lined with silk, silk in chief
lso held to come within paragraph 324. (Abstract
.) Also jewelry boxes with sides composed of wood
ıé and wood or wood covered and lined with cotton.
)8, of 1917.)
ood covered with surface-coated paper, wood chief
ld to come within paragraph 324 of the act of 1913
manufactures of wood under paragraph 176. (Ab-
)f 1916.)
s made of cardboard covered with paper, colored and
ented with colored grasses, twigs, berries, and cotton
klings, were held dutiable as manufactures in chief
under paragraph 332 of the act of 1913. (Abstract
)
composed of a cross of what appeared to be card-
and colored to represent stone and snow, an imitation
and a small figure representing Santa Claus attached
composed of cardboard, sanded on top to represent
sides covered with paper, having a design in imitation
·k, were held dutiable as boxes of surface-coated paper
)h 324 of the act of 1913. (Abstract 43030, of 1919.)
consisting of a paper carton or box fitted with small
skets intended for counter display after children's
ıave been put into the small boxes and baskets were
be an entirety and dutiable as in chief value of surface-
ınder paragraph 324 of the act of 1913, but dutiable
ure in chief value of paper under paragraph 332 as
as articles in chief value of surface-coated paper
h 324 or as manufactures in chief value of wood under
as to the smaller containers. (United States *v.*
Cust. Appls. 223, of 1919.)
)mposed of handmade paper with a surface design in
aid" lines, were held dutiable under the provision in
of the act of 1913 for "envelopes and all other articles
ly or in chief value of any of the foregoing papers"
der the provision in paragraph 327 for "paper enve-
flat, not specially provided for." (G. A. 7936, T. D.
)
es composed of writing paper the surface of which is
ı design, fancy pattern or character, were likewise
A. 7940, T. D. 36583, of 1916.) But writing paper and
ır being excluded from paragraph 324 by the specific
ıgraph 326 of the act of 1913, envelopes made therefrom,
ler paragraph 327 for "paper envelopes, folded or flat,
ovided for." (G. A. 8236, T. D. 37928, of 1919.)
e of two or more layers of cardboard were held to be
)f paper. (United States *v.* Overton, 6 Ct. Cust.
1915.)

PAPER STOCK.

General Information.

Act of 1913, paragraph 566: Paper stock, crude, of every description, including all grasses, fibers, rags, waste, including jute, hemp, and flax waste, shavings, old paper, rope ends, waste rope, and waste bagging, and all other waste not specially provided for in this section, including old gunny cloth and old gunny bags, used chiefly for paper making (free).

DESCRIPTION AND USES.

The tariff wording is self-explanatory. It is not possible to make a thorough differentiation of the various kinds of paper stock according to the finished paper into which they enter, for almost every kind of paper employs a great variety of raw materials. The principal kind of grass used is esparto grass, imported from Spain and Algeria. This grass makes a high-grade, light, fluffy book paper. It is little used in the United States, however, being consumed principally in the United Kingdom. Other grasses, such as saw grass from Florida, are of minor importance. There is probably no grass in existence that could not be made into paper if sufficient energy were expended on it, but most grasses yield too little cellulose to be commercially useful as paper-making material. "Fibers" is a general term applicable to anything of a fibrous texture. It should be emphasized, however, that except for some asbestos and negligible quantities of other fibers, only vegetable fibers are used. Rags enter into almost all kinds of paper except newsprint, wrapping, and hanging paper, although certain grades of a great many other kinds of paper contain no rags. They are not always absent from the kinds of paper mentioned. The best rags are new linen cuttings, although new cotton cuttings make an excellent quality of paper. New linen and rag cuttings have their most important use in making the best qualities of writing, bond, and ledger paper. Old rags of light color which have been carefully sorted and cleaned are much used in making writing paper, book paper, tissue paper, and all sorts of specialties. Heavy, coarse, colored rags are one of the important constituents of sheathing paper, roofing felt, and other coarse, heavy papers, and are used to some extent in making paper boards. Woolen rags are not used. Waste of jute, hemp, and flax and waste bagging and gunny cloth are often used to make a heavy, strong paper—for instance, manila wrapping paper. Old paper enters into paper of all kinds. Ninety per cent of the paper boards made in the United States is of waste paper. Building paper and felts and cheap wrapping paper also consume considerable amounts. Waste paper is used, usually in small proportions, in making book paper and other papers of relatively high quality. Straw is also used in appreciable amounts in the manufacture of paper board, and to some extent in making certain kinds of paper. Straw-board manufacture in Holland is a definitely developed industry.

SUGGESTED CHANGE IN TARIFF WORDING.

In the act of 1913 there is an item at the end of paragraph 408 in the free list which reads "and waste of any of the above articles suitable for the manufacture of paper." The articles referred to are

g for cotton, gunny cloth, similar fabrics, suitable for covering
, composed of a variety of materials, and plain woven fabrics
e jute yarns. This item appears to be a partial duplication of
ıph 566, the paper stock paragraph, and might be removed
rfluous. It is also suggested that in order to eliminate the
ity of free importation of bags which are still suitable for
ontainers, the following words be added at the end of paragraph
ıo longer suitable for bags."

DOMESTIC CONSUMPTION.

e at the end of this section (p. 55) shows the consumption of
ock in the United States by States in the census years from
914. No comprehensive figures are obtainable for later years.
idly increasing tonnage of waste paper used is the most
eature of this table. This is explained by the development
ıper board industry in the last few years. (See Tariff In-
ı Survey M–1, on Building Paper, Paper Boards, and
sse.) In 1904, 588,543 tons of waste paper were consumed
ited States. In 1914 the amount had increased to 1,509,981
1914 rags were next in importance, 361,667 tons being con-
In tonnage straw was next with 307,839 tons, and manila
with 121,170 tons. The value of the manila stock, how-
considerably higher than the value of the straw. Straw
r costs much less per ton than rags or manila stock because
r percentage of cellulose yield.
est amounts of waste paper are consumed in Ohio, Michigan,
, New Jersey, and Massachusetts. Massachusetts con-
nost rags; it is followed by Pennsylvania, Illinois, and Ohio.
Jersey, and Massachusetts are the most important manila-
ıming States. Straw is naturally consumed near the pro-
ters, for its cost of transportation per unit of cellulose
extremely high. Ohio, Indiana, and Illinois are the
h consume the greatest amounts of straw.

DOMESTIC EXPORTS.

ded table (see p. 59) shows the United States exports of
from 1910 to 1921. In the five years prior to the war
from 32,000,000 to 85,000,000 pounds per annum.
war the average was below 30,000,000 pounds, but after
orts increased to 84,666,468 in the calendar year 1920.
s depression of 1920–21 caused exports in 1921 to fall
,442 pounds.
t trade in paper stock has a wide market. From 1910 to
ıited Kingdom was much the most important foreign
American paper stock. Canada was second, Germany
ertain other western European countries followed. In
ports to the United Kingdom suddenly almost ceased,
since resumed. Since that time Canada, on the average,
more than half of our paper stock exports. Beginning
nsiderable amounts were shipped to British India and
Straits Settlements, while exports to western Europe
l. In following years an export trade of considerable

PAPER STOCK.

General Information.

Act of 1913, paragraph 566: Paper stock, crude, of every description, inc: grasses, fibers, rags, waste, including jute, hemp, and flax waste, shavings, rope ends, waste rope, and waste bagging, and all other waste not specially for in this section, including old gunny cloth and old gunny bags, used paper making (free).

DESCRIPTION AND USES.

The tariff wording is self-explanatory. It is not possible a thorough differentiation of the various kinds of paper stoc ing to the finished paper into which they enter, for almost e of paper employs a great variety of raw materials. The kind of grass used is esparto grass, imported from Spain and This grass makes a high-grade, light, fluffy book paper. I used in the United States, however, being consumed prin the United Kingdom. Other grasses, such as saw grass fro are of minor importance. There is probably no grass in that could not be made into paper if sufficient energy were on it, but most grasses yield too little cellulose to be con useful as paper-making material. "Fibers" is a general plicable to anything of a fibrous texture. It should be em however, that except for some asbestos and negligible qu other fibers, only vegetable fibers are used. Rags enter in all kinds of paper except newsprint, wrapping, and hangi although certain grades of a great many other kinds of pap no rags. They are not always absent from the kinds of p tioned. The best rags are new linen cuttings, although n cuttings make an excellent quality of paper. New linen cuttings have their most important use in making the bes of writing, bond, and ledger paper. Old rags of light co have been carefully sorted and cleaned are much used writing paper, book paper, tissue paper, and all sorts of Heavy, coarse, colored rags are one of the important co of sheathing paper, roofing felt, and other coarse, heavy p are used to some extent in making paper boards. Wool not used. Waste of jute, hemp, and flax and waste bu gunny cloth are often used to make a heavy, strong instance, manila wrapping paper. Old paper enters int all kinds. Ninety per cent of the paper boards made in States is of waste paper. Building paper and felts and c ping paper also consume considerable amounts. Wast used, usually in small proportions, in making book pape papers of relatively high quality. Straw is also used in amounts in the manufacture of paper board, and to som making certain kinds of paper. Straw-board manufactur is a definitely developed industry.

SUGGESTED CHANGE IN TARIFF WORDING.

In the act of 1913 there is an item at the end of parag the free list which reads "and waste of any of the ab suitable for the manufacture of paper." The articles ref

were shipped to [illegible]
while exports to [illegible]
ars an export trade of [illegible]

volume to the Dutch East Indies, Hongkong, the Philippines, and other eastern countries developed. Thus our export market during the war shifted from western Europe and Canada to Canada and the Orient.

Our export trade, however, is only a small part of our import trade and of domestic consumption. In 1920 exports amounted to less than one-sixth of imports. In 1914 exports were approximately only one-hundredth of domestic consumption.

IMPORTS.

Imports of rags appear to fluctuate considerably according to business conditions. Thus during the fiscal years from 1910 to 1913 imports of rags increased steadily from 180,114,457 pounds to 245,113,327 pounds. In the fiscal year 1914, when general industry was relatively depressed, they fell to 180,906,309 pounds. During the war imports remained low, reaching the small amount of 3,914,064 pounds in the calendar year 1918. During the prosperous year of 1920 they reached a record amount, 273,007,172 pounds, but fell to 116,794,391 pounds in 1921.

Imports of other kinds of paper stock [1] have fluctuated far less, their money value during the war being very little less than the average pre-war value. They were greatest in value in the calendar year 1920 when they amounted to $8,792,578, but in 1921 they were only $2,527,185. Quantity figures were not compiled until 1919. In the last three years the quantities have been very nearly equal to the quantities of rags imported.

Rags, before the war, came primarily from the textile countries of western Europe, particularly the United Kingdom, Germany, and France, and also Holland and Belgium. During the war Canada was the principal source, Europe sending practically no rags. One of the most serious complaints of manufacturers of fine paper during the war was the difficulty of securing high-class textile cuttings from Europe. After the war Europe regained its importance as a supplier of rags to the United States, certain countries sending record amounts, although imports from Germany in 1920 were still a small fraction of their pre-war volume.

An appended table (see p. 58) shows also imports of rag pulp. These are considered, however, in the Tariff Information Survey on Wood Pulp and Rag Pulp.

The same general pre-war geographical distribution prevailed also in the case of other kinds of paper stock. The United Kingdom, however, stood out as more important than any other country as a source of "all other" paper stock, and maintained this position steadily throughout the war and after it. Moreover, British India is also an important source. The war affected the distribution of imports much less in the case of "all other" paper stock than in the case of rags, western Europe retaining its importance as a source of supply from 1910 to 1921.

The latest year for which comparable production and import figures for paper stock are available is 1914. In that year our total imports amounted to between one-fifth and one-sixth of domestic consumption, on the basis of value.

[1] Grasses, fibers, waste, etc.

TARIFF HISTORY.

ler the tariff acts from 1883 to 1913 paper stock has been on ›e list.

COMPETITIVE CONDITIONS.

'e is no pressing tariff problem in the case of paper stock e of the fact that there is no industry which has as its function of its functions the production of paper stock. Paper stock is a waste product or a by-product, except in certain minor es such as the production of esparto grass in Spain and , which does not come into competition with any similar y in the United States, and which involves very little capital :. It is true that the gathering of old paper and rags has a fairly extensive undertaking in the United States, but it no process other than a concentration in central places of ıaterial obtained from houses, factories, and other buildings l throughout the country, baling or bagging it, and trans- it to the consumer.

STATISTICAL TABLES.

NSUMPTION OF PAPER STOCK IN THE UNITED STATES.

Material and State.	1904—Quantity.	1909—Quantity.	1914	
			Quantity.	Cost.
g cotton and flax waste and sweepings,	*Short tons.* 294,552	*Short tons.* 357,470	*Short tons.* 361,667	$12,151,288
tts	99,468	93,558	79,307	5,181,974
ia	56,207	64,654	63,975	1,312,991
	22,877	33,744	37,303	978,771
	3,023	43,262	40,838	846,910
ıtes	20,898	20,484	26,818	772,912
	92,079	101,768	113,426	3,057,730
›er, total	588,543	983,882	1,509,981	19,161,400
	60,417	114,497	200,370	3,419,791
s	60,424	106,216	137,716	2,375,667
	55,475	93,239	200,996	2,307,643
	101,472	155,436	188,379	2,102,411
	47,613	114,437	154,879	1,542,278
	65,726	106,150	125,171	1,329,985
	77,698	75,169	111,282	1,304,240
	35,496	75,439	124,815	1,173,482
	30,257	52,509	94,227	1,012,668
›s	53,965	90,790	172,146	2,593,235
›luding jute bagging, rope waste, al	107,029	117,080	121,170	4,045,567
	12,268	25,949	39,230	850,851
	14,339	17,515	15,424	672,480
	24,161	21,162	17,008	642,156
;	56,261	52,454	49,508	1,880,080
	304,585	303,137	307,839	1,675,598
	119,981	140,580	93,556	534,725
	71,936	70,332	97,007	473,599
	61,936	57,254	74,327	409,114
	50,732	34,981	42,949	258,160

IMPORTS BY COUNTRIES.

Paper stock, crude (except wood pulp): Rags (except woolen).

Imported from—	Fiscal year.					
	1910		1911		1912	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Belgium	29,087,730	$279,720	31,479,837	$305,102	34,564,517	$322,239
France	38,205,806	360,323	35,860,416	343,782	43,711,391	398,799
Germany	46,624,701	760,657	42,632,943	713,177	45,697,711	808,336
Netherlands	9,224,384	120,822	9,453,368	124,421	22,158,839	263,958
United Kingdom	38,618,168	423,448	43,642,570	589,411	49,291,975	660,046
Canada	9,507,918	115,216	9,896,815	129,512	10,092,951	136,034
All other countries	8,845,750	107,191	7,847,953	92,792	9,164,183	95,830
Total	180,114,457	2,167,377	180,813,902	2,298,197	214,681,567	2,685,242

Imported from—	Fiscal year.					
	1913		1914		1915	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Belgium	29,179,945	$310,047	22,743,261	$262,892	4,372,098	$48,300
France	55,280,937	607,807	44,932,671	524,129	12,634,113	165,859
Germany	55,961,668	1,025,869	32,618,737	574,625	10,888,615	242,126
Netherlands	20,159,105	284,069	11,451,212	190,107	5,225,419	77,323
United Kingdom	60,376,806	861,593	48,440,022	739,872	45,291,569	690,348
Canada	11,578,545	178,636	11,622,007	165,760	14,016,416	222,909
All other countries	12,576,321	145,144	9,098,399	95,077	6,464,425	126,044
Total	245,113,327	3,413,165	180,906,309	2,552,462	98,872,650	1,572,909

Imported from—	Fiscal year.					
	1916		1917		1918	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Belgium						
France	13,989,121	$234,528	13,761,826	$348,496	2,667,585	$56,390
Germany	263,012	7,831				
Netherlands	8,179,847	161,721	6,958,161	201,733	1,221,601	41,853
United Kingdom	28,298,992	499,278	11,221,009	252,402	12,137,812	244,752
Canada	10,654,866	195,054	2,782,645	140,730	3,595,563	120,055
All other countries	6,176,388	129,121	9,475,937	214,921	629,023	17,060
Total	67,562,226	1,227,533	44,199,580	1,158,282	20,251,584	480,110

Imported from—	Calendar year.							
	1918		1919		1920		1921	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Belgium			8,424,581	$281,926	59,316,832	$1,640,624	26,043,583	$402,611
France	752,947	$15,733	21,152,103	830,418	78,205,858	2,356,410	28,780,026	467,075
Germany					5,612,803	299,942	25,809,798	286,189
Netherlands			33,581,406	981,818	51,103,834	2,281,416	15,480,190	312,362
United Kingdom	983,999	34,055	23,072,658	715,665	57,554,890	2,110,604	11,627,826	292,183
Canada	1,826,058	83,253	6,348,123	257,578	7,235,137	433,658	3,575,497	113,317
All other countries	349,060	11,150	2,029,196	113,362	13,977,818	597,314	5,477,471	147,404
Total	3,914,064	144,191	94,608,067	3,180,767	273,007,172	9,719,968	116,794,391	2,021,141

IMPORTS BY COUNTRIES—continued.

Paper stock, crude, all other.[1]

ɔrted from—	Fiscal year.					
	1910	1911	1912	1913	1914	1915
.....	$343,965	$257,891	$282,323	$329,145	$499,042	$89,567
.....	195,241	266,485	268,970	295,753	379,623	180,079
.....	403,106	467,377	553,136	636,898	1,196,880	407,400
.....	135,304	194,475	149,690	179,959	180,663	128,084
.....	71,509	64,479	29,018	24,155	38,413	63,870
dom.....	1,535,136	1,496,750	1,375,481	1,748,762	2,275,488	1,693,241
.....	243,075	232,732	234,986	266,341	350,290	298,424
.....	823	48,494	91,489	250,663	852,152	209,141
ntries.....	111,341	154,800	248,023	126,564	246,194	174,868
.....	3,039,500	3,183,483	3,233,116	3,858,240	6,018,745	3,244,674

Imported from—	Fiscal year.		
	1916	1917	1918
.....			
.....	$258,630	$454,476	$295,115
.....	3,024		
.....	148,690	88,807	20,041
.....	229,780	230,931	44,640
m.....	2,332,783	2,162,068	1,737,676
.....	297,232	552,722	531,262
.....	324,038	724,533	68,952
·ies.....	132,856	143,196	56,966
.....	3,727,033	4,356,733	2,754,652

sses, fibers, waste, etc., used chiefly for paper making.

ı—	Calendar year.						
	1918, value.	1919		1920		1921	
		Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
.....	.....	3,177,514	$119,760	17,658,077	$697,356	11,964,738	$260,989
.....	$299,622	11,664,349	404,054	17,227,669	510,789	9,041,539	169,559
.....	.....	1,959	78	870,844	31,999	5,883,472	103,098
.....	60	7,886,404	249,856	21,806,296	927,056	6,058,494	169,294
.....	90	4,159,567	120,346	3,383,694	139,203	890,078	23,960
.....	1,030,866	55,326,167	2,157,734	114,242,461	4,522,931	41,537,721	1,084,680
....	688,342	28,939,659	483,924	37,908,816	919,677	30,877,726	328,231
....	539,403	7,474,610	231,509	8,948,195	236,355	5,568,008	118,881
....	61,623	7,151,728	236,527	14,455,858	807,212	6,192,900	268,493
....	2,620,006	125,781,957	4,003,788	236,501,910	8,792,578	118,014,676	2,527,185

DOMESTIC EXPORTS—continued.

Paper stock: Rags, n. e. s., and other (except wood pu lp)—Continued.

Exported to—	Fiscal year.					
	1916		1917		1918	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
Belgium						
France	1,050	$21	38,206	$2,382	21,804	$805
Germany						
Italy			16,672	250	32,310	370
Netherlands						
United Kingdom	862,181	20,664	71,351	4,874	75,472	4,845
Canada	19,920,017	387,393	18,433,253	486,588	16,427,129	358,025
Mexico	54,550	998	31,613	517	887,289	15,117
British India	584,829	5,851	1,502,197	18,202	401,448	9,471
British Straits Settlements			796,520	13,764	3,313,941	57,483
Dutch East Indies	1,898,800	18,100	4,482,560	66,558	4,504,872	80,529
Hongkong			1,468,074	56,680	2,807,608	48,772
Japan	617,007	17,840	237,243	13,604	540,689	6,757
Philippine Islands	140,000	1,406	820,200	10,879	2,587,287	46,780
British South Africa					138,880	750
British East Africa			13,440	140	444,640	9,131
All other countries	76,942	1,840	636,879	14,724	639,817	13,947
Total	24,155,376	454,113	28,548,208	689,162	32,323,186	652,782

Exported to—	Calendar year.			
	1918		1919	
	Pounds.	Value.	Pounds.	Value.
Belgium			26,092	$1,190
France	21,804	$805	64,414	3,066
Germany				
Italy	20,995	205		
Netherlands			196,000	6,530
United Kingdom			17,796	1,102
Canada	17,550,777	413,104	27,322,761	933,393
Mexico	948,320	14,909	2,234,894	36,947
British India	198,800	3,241	3,331,992	70,945
British Straits Settlements	2,788,680	45,108	4,509,363	97,330
Dutch East Indies	4,390,600	73,318	4,431,033	107,627
Hongkong	1,671,040	27,876	8,225,379	176,797
Japan	904,003	10,286	727,614	16,917
Philippine Islands	1,881,146	35,500	2,063,875	42,724
British South Africa	591,280	19,800	110,900	3,852
British East Africa	444,640	9,131	22,400	500
All other countries	829,221	17,059	1,056,848	34,093
Total	32,241,306	670,342	54,541,361	1,533,013

Exported to—	Calendar year.			
	1920		1921	
	Pounds.	Value.	Pounds.	Value.
Belgium	5,712	$243	15,660	$455
France			17,030	600
Germany	281,786	13,155	763,535	21,861
Italy	2,240	90	6,000	50
Netherlands	622,600	23,595	52,854	1,327
United Kingdom	109,021	11,249	198,986	11,797
Canada	41,273,371	1,374,294	22,656,273	445,560
Mexico	376,880	8,202	1,092,340	17,401
British India	9,134,860	312,863	1,684,840	26,160
British Straits Settlements	8,107,440	213,655	1,024,800	11,838
Dutch East Indies	14,726,465	443,196	1,788,130	22,313
Hongkong	2,023,500	59,354	7,593,971	98,458
Japan	485,969	19,423	641,226	36,974
Philippine Islands	4,728,630	124,447	117,468	6,206
British South Africa				
British East Africa	58,600	2,588		
All other countries	2,729,394	112,575	2,758,329	38,535
Total	84,666,468	2,718,929	40,411,442	739,525

RATES OF DUTY.

Paper stock.

Tariff classification or description.	Rate of duty
Paper stock, crude, of every description, including all grasses, fibers, rags of all kinds, other than wool, waste, shavings, clippings, old paper, rope ends, waste rope, waste bagging, gunny bags, gunny cloth, old or refuse, to be used in making and fit only to be converted into paper, and unfit for any other manufacture, and cotton waste, whether for paper stock or other purposes	Free.
Paper stock, crude, of every description, including all grasses, fibers, rags other than wool), waste, shavings, clippings, old paper, rope ends, waste rope, waste bagging, old or refuse gunny bags or gunny cloth, and poplar or other woods, fit only to be converted into paper	Do.
Paper stock, crude, of every description, including all grasses, fibers, rags, waste, shavings, clippings, old paper, rope ends, waste rope, waste bagging, old or refuse gunny bags or gunny cloth, and poplar or other woods, fit only to be converted into paper	Do.
Paper stock, crude, of every description, including all grasses, fibers, rags (other than wool), waste, including jute waste, shavings, clippings, old paper, rope ends, waste rope, and waste bagging, including old gunny cloth and old gunny bags, fit only to be converted into paper	Do.
Paper stock, crude, of every description, including all grasses, fibers, rags (other than wool), waste, including jute waste, shavings, clippings, old paper, rope ends, waste rope, and waste bagging, and all other waste not specially provided for in this section, including old gunny cloth and old gunny bags, used chiefly for papermaking	
Paper stock, crude, of every description, including all grasses, fibers, rags, waste, including jute, hemp, and flax waste, shavings, clippings, old paper, rope ends, waste rope, and waste bagging, and all other waste not specially provided for in this section, including old gunny cloth and old gunny bags, used chiefly for paper making	Do.

COURT AND TREASURY DECISIONS.

y that the merchandise could be used for paper making
ıt to sustain a protest claiming classification under para-
f the act of 1913 as being "used chiefly for paper making."
l bags of comparatively large size, frequently entire bags
one end or side, the fabric in most cases being still sound.
egarded as rags under paragraph 586 of that act. United
wning, 9 Ct. Cust. Appls., 84 of 1919.)
under the act of 1913 the court, in construing paragraph
ıt if the material is so worn as to be no better than rags
r shreds, and is not such as is chiefly used for paper
; exempt from duty under paragraph 586 of the act of
If it is commercially and chiefly used as paper stock,
duty as such under paragraph 566. (McGettrick v.
s, 11 Ct. Cust. Appls., — of 1921, T. D. 38727.)

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UNITED STATES TARIFF COMMISSION
WASHINGTON

FF INFORMATION SURVEYS

ON THE ARTICLES IN

PARAGRAPH 323 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

ı 323:
ıe, Bibulous, and Filter Paper

Paragraph 324:
Parchment Paper and Imitation Parchment Paper

Paragraph 568:
Parchment and Vellum

REVISED EDITION

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UNITED STATES TARIFF COMMISSION.

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PREFACE.

s one of a series of Tariff Information Surveys prepared by ted States Tariff Commission and transmitted to the Com- n Ways and Means. The series covers all of the articles and lities provided for in the tariff act of October 3, 1913, and ıot specifically provided for. It is arranged in the numerical the paragraphs of that act.

me cases two or more paragraphs have been combined in one ıet. In doing this, industrial relationship of the articles has llowed when possible. In those instances where a paragraph ɜn treated under a preceding paragraph of the tariff act, refer- made to this fact at the point where the paragraph appears in ical order. Where one grade of an article is dutiable and r grade of the same article is on the free list, the article is ɜed under the dutiable paragraph, which appears first in ical order in the tariff act. In certain instances articles of industrial relationship and which occur in separate paragraphs tariff act have been combined under one paragraph for con- ıce of discussion. Reference is made to this fact at the point the commodities would naturally occur in numerical order.

ɜ first pamphlet in the series is an "Introduction and index," ı contains:

An introductory chapter discussing the scope of the series and eneral method of treatment.

An alphabetical index of the articles provided for in the tariff f 1913, showing the paragraph of the act in which the article is ided for, and, if discussed under a different paragraph, the ber of such paragraph.

A list of the pamphlets in the series, showing the paragraphs articles included in each pamphlet.

ıus by use of this "Introduction and index" the exact loca- of the discussion relating to a given article or commodity can be rtained.

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n the preparation of this report the Tariff Commission had the rices of Constant Southworth, of its staff, and of others.

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IBULOUS, AND FILTER PAPER AND THEIR MANUFACTURES.

ACT OF OCTOBER 3, 1913.

Papers commonly known as copying paper, stereotype paper, bibulous paper, pottery paper, letter-copying books, wholly or partly manufactured paper and filtering paper, and articles manufactured from any of the papers or of which such paper is the component material of chief value, not specially provided for, 20 per centum ad valorem.

SUMMARY.

Paper (148,142 tons in 1921) ranks seventh in production among different kinds of paper in the United States, being exceeded by paper boards, newsprint, book paper, wrapping paper, fine paper, and building paper. The production of blotting paper, the principal kind of bibulous paper, in 1919 was about one-fourteenth as much as tissue paper. Litmus paper, classified as bibulous paper, and filter paper are specialties produced in very small quantities. An estimate places the annual production of filter paper in the United States at 500 tons.

There is no tariff problem in the tissue and blotting paper industries. The United States, like the other important paper-producing countries of the world, has an exportable surplus of tissue and blotting paper. On the other hand, the United States exported in 1919, 5 per cent of the domestic production and imported in 1921 only one-third of 1 per cent of production. Imports of blotting paper into the United States are practically negligible now. It is probable that exports will increase. Imports. Litmus paper is unimportant. No import or export figures are available. This country produces only an ordinary grade of filter paper for clarifying liquids and for qualitative work in chemistry. The United States is dependent on England, Sweden, Germany, and France for practically the whole supply of high-grade filter paper for quantitative chemical analysis.

Summary table—Tissue paper.[1]

Year.	Domestic production.[2]	Imports for consumption.[3]	Domestic exports.[4]	Ratio to production.	
				Imports.[5]	Exports.[6]
	Short tons.	*Short tons.*		*Per cent.*	*Per cent.*
		604			
		746			
		696			
		819			
	[7] 115,401	998		0.86	
		932			
		758			
	[7] 126,286	910		.72	
		326			
year:					
	143,298	199	$1,443,578	.14	
	[8] 155,400	342	2,056,607	.22	5.05
	177,447	428	2,654,529	.24	
	148,142	514	906,411	.34	

ible figures for bibulous and filter paper are too meager to permit the compilation of summary

ction figures for 1914 are from Bureau of Census; later figures from Federal Trade Commission.
les copying, stereotype, bibulous, tissue, and pottery papers.
les tissue and toilet papers.
l on quantity.
l on value.
dar year.
) of production in 1919, according to the Bureau of Census, was $40,695,523. (The figure shown tity was compiled by the Federal Trade Commission.)

Summary table—Tissue paper—Continued.

	Imports for consumption.[a]	Amount of duty.[a]	Value per unit of quantity (pound).[a]	Actual or equivalent ad valorem rate.[a]
Fiscal year:	*Value.*			*Per cent.*
1910	$276,205	$108,666	$0.229	39.34
1911	307,329	129,427	.206	42.11
1912	285,562	120,873	.205	42.33
1913	342,485	143,526	.209	41.91
1914	383,831	122,035	.192	31.79
1915	364,002	109,200	.195	30.00
1916	369,591	110,877	.244	30.00
1917	414,461	124,338	.228	30.00
1918	237,337	71,201	.364	30.00
Calendar year:				
1918	149,712	44,914	.376	30.00
1919	396,418	118,925	.580	30.00
1920	458,818	137,645	.537	30.00
1921	451,802	135,541	.439	30.00

[a] Includes copying, stereotype, bibulous, tissue, and pottery papers.

General Information.

DESCRIPTION.

Tissue paper.—Tissue paper is a thin paper of fine, soft texture, silky to the touch, translucent, and to a limited extent transparent; it is distinguished from other kinds of paper chiefly by its thinness. The better qualities are made from rag and the cheaper from wood pulp. Its principal uses are for toilet purposes, for napkins, and for wrapping articles, especially articles liable to tarnish. The anti-tarnishing quality results from special processes pursued in its manufacture which free it from sulphur or other chemicals that tarnish metal. Wrapping paper, which is also tissue paper, is considered as tissue paper for tariff purposes and bears a duty of 30 per cent instead of the 25 per cent duty on wrapping paper n. s. p. f.

Copying, stereotype, pottery, and crêpe papers, as specified in paragraph 323 of the act of 1913, are special varieties of tissue paper, their output forming, however, only a very small percentage of the total output of tissue paper. Copying paper is a strong, unsized, usually cheap tissue paper used for the manufacture of letter books, in which copies of letters are kept, and also for the manufacture of carbon paper. The letter-copying books themselves are also dutiable under paragraph 323 at the same rate. Stereotype paper is an extra strong pliable tissue used in the manufacture of stereos (molds or matrices) from which printing plates are made. It is often an absorbent, unsized, so-called waterleaf paper. The sheets of paper, a considerable number together, and backed by matrix paper, which is an absorbent paper similar to high-grade hard blotting paper, and by ordinary brown paper, are pressed against the type to form the mold, the metal for the plate being then cast in the mold. Pottery paper, a term not used in the paper trade, is either a thin tissue of good quality, well glazed, used for wrapping pottery, or a special kind of tissue paper by which designs are transferred to pottery. Crêpe paper is a very thin, tough, strong tissue, made usually of com-

colored and passed through heavy embossed rollers, le the paper into a form resembling crêpe. It is used nd decorative purposes; also for paper towels. Kraft r is an unusually strong tissue paper, made wholly or in hate wood pulp.

and filter paper.—Bibulous paper is a porous, absorbent for soaking up liquids. Blotting paper is the principal bibulous paper. One kind of tissue paper, used for mas-ses, is called bibulous tissue paper. Litmus paper, a emically treated paper, used to determine whether a solu-l or alkaline in nature, is, for customs purposes, regarded s paper. Filter paper, although separately named in the eally a kind of bibulous paper; the domestic product in s a very ordinary grade, differing little from blotting paper principally for clarifying liquids. It is used by manufactur-p, varnish, paint, sugar, color, and pharmaceutical prod-by electrical companies to filter oil for transformers. It is for chemical qualitative analysis. The best grades for ive analysis are not made in this country, but must be im-Recently, however, a beginning has been made in manu-the better grades. Toweling paper partakes of the char-s both of absorbent or bibulous paper and of tissue paper. quently a crêpe paper of somewhat greater thickness than tissue paper.

in the tariff classification of 1913.—The terms "bibulous nd "pottery paper" are now very little used in the Ameri-e. They are likely to cause confusion in reporting imports. ariff classification of the act of 1913 in grouping bibulous and per with tissue paper is apparently based more on a desire together all papers bearing a 30 per cent duty than on any ced similarity of material, structure, or use. Thus, in the ation of the several kinds of paper provided for in paragraph bulous paper is between stereotype paper, which is a variety e paper, and tissue paper itself, although bibulous paper in is entirely unlike tissue paper. Filter paper is adjacent to aper without a comma between, as if to imply some particu-ose relationship, whereas in reality the two varieties are un-material, method of manufacture, and use.

such a classification is liable to mislead is demonstrated by icles imported under paragraph 323 of the act of 1913 as d by the Bureau of Foreign and Domestic Commerce. reau in question, because the item, copying paper, is named ecords imports of these papers under the general heading ing and similar papers and manufactures of." This classifica-a grouping of wholly dissimilar varieties of paper, viz, tissue ibulous paper, under a minor subdivision of one of those ies, copying paper being a relatively unimportant kind of paper. Moreover, the figures for the imports of crêpe paper hose for filter paper are reported jointly, although, as noted, varieties have little in common beside the fact that they are paper.

40822—23—M-3——2

Also the inclusion of letter-copying books between varieties of unmanufactured paper is open to objection on the grounds of inconsistency.

DOMESTIC PRODUCTION.

The production of tissue paper ranks seventh in the scale of the domestic output of paper, being exceeded by that of paper boards, newsprint, book paper, wrapping paper, fine paper, and building paper. In value of production, however, tissue paper ranks ahead of building paper. The production of blotting paper is only about one-fourteenth that of tissue paper. The other grades discussed, filter paper and litmus paper, are specialties produced in very small quantities in this country.

Materials.—The material used in the manufacture of tissue paper consists of rag pulp, chemical wood pulp (principally sulphite), and to some extent ground wood. A similar gradation of material exists in the case of blotting paper, except that soda wood pulp is used to a greater degree than sulphite. Filter paper is usually made from high-grade cotton-rag pulp, with sometimes a little wool fiber mixed in. Litmus paper is made mainly of rag pulp and to some extent of chemical wood pulp. Although much wood pulp and considerable quantities of rags are imported, they come in free, the former principally from Canada and to some extent from the Scandinavian countries and the latter from Europe. Thus the availability of the main raw materials is not affected by the tariff.

Secondary materials are rosin, alum, dyes, china clay, agalite, and tincture of litmus. Rosin is used for sizing purposes to decrease the porosity and absorbency of the paper, and, if a design or anything else is to be printed on it, to allow it to take the ink without blotting. Alum is used to precipitate the rosin and any coloring materials which may be used. Filler, which renders the paper opaque and gives it body, is very little used in the varieties of paper under discussion, except blotting paper and composite matrices made of stereotype paper. The principal fillers are talc, agalite (ground asbestine fiber), and china clay. English china clay is considered by many people the most satisfactory kind of china clay. Tincture of litmus is used for impregnating the paper from which litmus paper is made. These secondary materials are used in small amounts. Obtaining them presents no difficulty and no tariff problem. (For special consideration of rags, English china clay, and coloring materials in relation to paper manufacture, see survey on fine paper.)

Equipment.—Practically all the machinery and other equipment of the tissue, blotting, and filter paper industries are manufactured in this country. The American product appears to be as satisfactory as any foreign paper machinery. The American manufacturer of these kinds of paper is in as advantageous a position to procure equipment as the manufacturer in any other country.

Methods of production.—The preparation of the wood and rag pulp prior to the paper-making process is described in the survey on wood pulp and rag pulp. The process in the beater and in the Jordan refining engine is exactly the same for the papers under discussion as for any other kind of paper. (See survey on printing paper.)

ssue paper must be made ordinarily on a special machine because
s extreme thinness. The web of paper has not the strength to
r across unsupported from one part of an ordinary paper machine
nother. Moreover, it does not need as much pressing and drying
ost other varieties of paper. A modification of the Fourdrinier
ıine known as the Harper machine is much used to meet these
.al conditions. This machine resembles an ordinary Fourdrinier
ıine (see survey on printing paper), with the entire portion
d of the presses turned around end for end, for the wire travels
y from the presses instead of toward them. The paper formed
he wire is carried back from the couch rolls (at the end of the
) on a long felt traveling on rolls high above the wire. This
supports the paper until it enters the presses, and sometimes even
l it enters the dryers; thus there are no gaps to bridge, such as
t between the couch rolls and presses in the ordinary Fourdrinier
hine. Because of the little pressing required, the Harper machine
uently has only one set of press rolls.

dryer of the type used on a Yankee machine is often employed
drying tissue paper, on account of the ease and comparative
kness of drying such paper. This dryer consists of a huge single
nder, sometimes considerably more than 10 feet in diameter,
reas on the ordinary Fourdrinier machine there are many drying
nders of 3 to 5 feet diameter. It has a polished surface, against
ch a set of press rolls runs, the top press roll coming in contact
ı the surface of the dryer. A dryer felt carries the paper around
cylinder and between the cylinder and the press rolls. By this
hod a shiny surface, unobtainable by ordinary calendering, is
arted to one side of the paper, the process being somewhat
ilar to ironing laundry. It is not a fast way of producing paper,
vever, for the cylinder, in order to dry the paper in one revolution,
st run slowly. Not all tissue paper is dried in this way; a great
l is dried over ordinary drying cylinders and is machine calendered.
fter the tissue paper is made, a number of finishing processes cut
p into the desired sizes, perforate it (in the case of toilet paper
paper towels), and, if necessary, roll it up.

Blotting paper is made in the ordinary way, usually on a Four-
ıier machine, but sometimes on a cylinder machine. (See sur-
's on printing paper and on paper boards.) The best blotting
ers are made of cotton fiber, because of its great capacity to soak
liquids. Soft soda pulp, preferably poplar, gum, or sycamore,
vever, makes a satisfactory medium grade. Esparto fiber is
ch used in England to produce the same grade. These fibers
da and esparto) are light, short, bulky, and opaque, and much
ter adapted to making blotting paper than is sulphite wood pulp.
e survey on wood pulp and rag pulp.) Cheap blotters are some-
ıes made of almost pure mechanical wood pulp. The Germans
ke an extra-thick blotting paper out of waste cotton with 20 per
ıt wool addition. From 10 to 20 per cent of filler appears to be
owable in blotting-paper manufacture without diminishing the
sorptive power of the paper. Agalite (ground asbestine fiber)
he best filler for the higher grades and china clay or chalk for the
ver grades. The Germans have a process for strengthening the
rder of blotting paper by impregnating it with substances not
ily soluble in water, such as varnishes, fats, rosin, soap, glue,

gelatin, etc., which are frequently treated with tannin, alum, formaldehyde, etc.

The principal requirements of good blotting paper are absorbency, a good printing surface, and freedom from hairiness. Hairiness tends to cause smudging of the ink.

The best filter paper is the purest form of cellulose in general use. Filter paper should be made of a good quality of cotton rags. Sometimes a little wool fiber is mixed in. The rags are boiled with caustic soda and then bleached with gaseous chlorine. No sizing is used. Great skill is needed in adjusting the speed and in determining the correct period of beating, for if the stock is beaten too slowly the rate of filtration in the finished paper will be too slow, while if the stock is beaten too freely fine-grained precipitates will pass through the filter. The nature of the beating will be determined by whether a thorough and hence slow filtering paper or a fast and hence not a very thorough filtering paper is desired. The best filter paper, after being made on the paper machine, is treated with hydrochloric and hydrofluoric acid to remove the inorganic impurities. The Swedish system is then to freeze the paper; this renders it soft and minutely porous, as the action of ice crystals, while forming, forces the fibers apart with just enough vigor to produce pores of the most suitable size and shape.

The English have a good system of toughening ordinary filter paper. They dip it quickly into concentrated nitric acid, drain it rapidly, place it in running water, and then immerse it in 0.5 per cent ammonium hydroxide until all acid is neutralized. They then wash it in running water, drain, and partially dry it between sheets of blotting paper; after it is removed from the blotting paper it is fully dried at a high temperature, and then the whole process is repeated. The linear shrinkage is about 9 per cent.

Only filter paper for accurate quantitative analytical work needs these special treatments. Papers for rough qualitative work and industrial purposes are not so treated.

After being made into sheets filter paper is ordinarily stamped out in disks of various diameters, which are packed together in bundles for sale, although a good deal is sold in sheet form. The heavier grades are sold in large sheets for filter presses and other industrial work.

Considerable quantities of filter-paper stock are never made into paper at all, but are dried and sold in bulk form as filter masse for packing into various forms of stoneware and metallic filtering apparatus. For this purpose sulphite wood pulp is an effective and cheap substitute for cotton rag pulp. (See survey on filter masse.)

Litmus paper is made from an ordinary waterleaf (unsized) paper of rag or wood pulp, similar to the cheaper grades of filter paper. The paper is soaked in tincture of litmus.

Organization.—The grades of paper discussed, like all other kinds of paper, are usually produced in large factories, each one capitalized at a large amount, for expensive machinery occupying considerable space is necessary. The establishment of a paper mill, especially one which makes its own pulp, takes a long time. The investment is thus necessarily a permanent one.

The greater number of the mills producing tissue paper manufacture that kind of paper only. Nearly half the concerns converting

e paper into toilet paper also manufacture the tissue paper itself. t concerns in the United States make blotting paper. Some of e make a small quantity of litmus paper. Seven concerns manure filter paper.

wide domestic market exists for tissue and blotting paper, while us and other special absorbent papers and filter paper, on account heir limited use, are usually manufactured only in response to ial orders.

anufacturers of tissue paper are affiliated in the Tissue Paper ufacturers' Association and converters of toilet paper in the et Paper Converters' Association. No special associations exist manufacturers of the other kinds of paper in question, as far as e particular grades as such are concerned.

Number of mills.—In December, 1920, there were 101 mills in the ted States manufacturing tissue paper; of the companies owning e mills 16 made crêpe paper, 7 copying paper, and 5 stereo tissue er. Of the 52 concerns making toilet paper, 26 made their own ue paper on Fourdrinier or Harper machines, being included ong companies owning the above total of 101 tissue-paper mills; were merely converters, purchasing their tissue paper. In July, 2, 95 mills were manufacturing tissue paper. Of the 54 concerns king toilet paper in 1922, 25 made their own tissue paper.

Filter paper and blotting paper, as already noted, were made in 22 by 7 and 8 companies, respectively. Paper for towels was made 24 companies.

Geographical distribution.—Nearly one-half of the tissue paper oduced in this country is made in New York. New Jersey, Wisnsin, New Hampshire, Pennsylvania, and Massachusetts are the ner important States producing tissue paper. Richmond, Va., is e largest blotting-paper center in the United States. The District Columbia, Connecticut, Massachusetts, and Ohio are also of nificance in blotting-paper manufacture. American filter paper made in Massachusetts, Pennsylvania, Wisconsin, Minnesota, ew York, and Virginia.

Domestic production and consumption.—Between 1899 and 1920 the oduction of tissue paper in the United States increased more than fold, from 28,406 tons in 1899 to 177,447 tons in 1920. In 1921, it creased to 148,142 tons but reached 108,569 tons in the first seven onths of 1922.

An appended table, page 13, of monthly tissue-paper production om 1919 to 1921 shows an increase from an average of slightly ver 10,000 tons per month in the first half of 1919 to nearly 15,000 ns per month in the second half of 1919. The increase continued owly in 1920 to about 17,000 tons per month during the summer. rom October, 1920, to January, 1921, a marked decrease took place wing to the business depression. However, production gradually ncreased during 1921. Production in December, 1921, was more han twice that of January, 1921.

The production of blotting paper more than tripled between 1899 nd 1914, increasing from 4,351 to 14,157 tons in that period. However, it decreased to 13,420 tons in 1919.

As already noted, the domestic production of filter and litmus paper sed in chemistry is very small. One estimate places the annual ilter production at 500 tons.

Domestic production of tissue paper supplies practically the whole of domestic consumption, imports into this country in the calendar year 1920 amounting to one-third of 1 per cent of production. Blotting paper used in the United States is also practically entirely produced at home, although before the war some came from England. Filter paper likewise is produced principally at home, except for the best grades for accurate quantitative work, which must be imported.

Domestic exports.—The only exports separately reported are those labeled "tissue and toilet paper," and these have been compiled only from 1918 up to 1922 by value, not by quantity. In 1918 they amounted to $1,443,578, in 1919 to $2,056,607, and in 1920 to $2,654,529. In 1921, they decreased to $906,411. In the calendar year 1919 the United States exported 5 per cent of the domestic production of tissue paper (including toilet). In the first seven months of 1922 exports amounted to 2,217 tons, or 2 per cent of production. The value of these exports was $656,252.

Canada is the largest market, with $304,616 worth of imports from the United States in the calendar year 1921. The next most important market in 1921 was the United Kingdom, with imports valued at $178,237. Mexico and Cuba were the only other important markets in 1921, although in 1919 and 1920 the United States exported considerable quantities to other Latin-American countries and to countries in the Far East.

The domestic exports of filter paper are insignificant.

FOREIGN PRODUCTION.

Tissue paper.—As in most other grades of paper, the United States leads the world in the production of tissue paper. Nevertheless, some European countries produce tissue paper, particularly tissue paper for carbonizing, which is superior in certain respects to American paper, and is used, to some extent, in the United States. English carbonizing tissue paper is of excellent quality. Before the war, although reliable comparative figures for tissue paper production are not available, Germany was probably second to the United States in importance. Thus, in 1914 Germany exported $795,350 worth of tissue paper, which is probably considerably more than the United States exported in that year. Germany's exports of tissue paper went in largest amount to the United Kingdom. Next most important as the destination of Germany's exports were Austria-Hungary, Switzerland, and other European countries. The United States received $26,765 worth. Sweden can not meet home requirements in tissue paper, and therefore must import it in considerable quantity. Norway produced only 2,320 metric tons of tissue paper in 1909. The United Kingdom before the war was dependent on Germany, Austria, and France, and to some extent the United States, for part of her tissue paper. Canada in 1919 produced only 3,530 short tons of tissue and toilet paper, valued at $806,438. As the United States exported to Canada in that year $430,360 worth of tissue paper, and in 1920, $797,395 worth, it will be seen that Canada imports from this country nearly as much as she produces.

Blotting paper.—Separate figures for foreign production are not available. It is significant, however, that before the war the United States could market high-class blotting paper in Germany and

ı, the countries from which the United States might most ex-
mpetition. Sweden in 1912 imported 83 tons of blotting and
aper, 20 of which came from the United States. However,
ı also exported some blotting paper, though not as much as
ported. The United Kingdom imports considerable quantities
ting paper. The United States, Germany, and Sweden are her
ources of imports. Canada produced practically no blotting
whatsoever in 1917 or in 1919.

r and litmus paper.—The best grades of filter paper are manu-
d in England, Sweden, Germany, and France, where there
umber of firms that have given special attention to the sub-
nd have produced a wide variety of filter papers suitable to the
s requirements of the chemist. Before the war Germany was
incipal manufacturer of filter paper, Sweden was second, and
was third. During the past five years England has built up
stantial business in high-grade filter paper and has forged
front in the scale of production. England now ranks first
weden second; Germany and France rank next with approxi-
y equal production. The United States is dependent on these
ies for its supply of filter paper for quantitative analytical

Litmus paper in foreign countries, principally those just men-
, is a specialty, as it is in the United States, and is produced in
small quantities.

IMPORTS.

ing to the system used in compiling import statistics, it was
ılt up to 1919 to determine the separate amounts of the imports
varieties under discussion. The figures for imports of copying,
type, bibulous, tissue, and pottery papers, however, come
r close to the figures for imports of all grades of tissue paper,
though they omit crêpe paper and include bibulous paper.
increased from 524 tons in the fiscal year 1907 to 998 tons in
scal year 1914, but fell off sharply during the war. In the
dar years 1919, 1920, and 1921 they were 342, 428, and 514
respectively. As shown in the summary table, the 1920 im-
were one-third of 1 per cent of domestic production, and in
scal year 1914, when imports were largest, they were only 0.86
per cent of production.

e imports of the different varieties of tissue paper in the cal-
r years 1919 to 1921 were separately stated, except that the
and filter paper combination was maintained. Imports of
paper as such were much the most important, amounting in
to 456 tons. Copying and crêpe came next, though the latter
t separable from filter paper. Imports of pottery and stereo-
paper were almost negligible.

e imports of bibulous paper, eo nomine, amounted in the calen-
ear 1921 to only 15 tons.

separate figures for imports of blotting paper are available.

ports of crêpe and filter papers increased from 191 tons in the
year 1907 to 438 tons in 1915 (although the latter figure in-
s also manufactures of these grades). Since then they have
eased, amounting to only 290 tons in the calendar year 1921.
ould considerably enhance the usefulness of these figures were
mports of the two grades separated. England, Sweden, France,

Germany are the principal foreign sources of filter paper. This
ne only variety of paper under discussion for an important part
ne supply of which the United States is dependent on imports,
tically our whole supply of high-grade filter paper being im-
ed.

nports of manufactures of copying, stereotype, bibulous, tissue,
ery, crêpe, and filtering papers decreased from $1,839,831 in the
l year 1917 to $43,893 in the calendar year 1921.

PRICES.

an appended table, page 15, are shown domestic prices of the
cipal grades of tissue paper from 1910 to September, 1922, com-
l from the Paper Trade Journal. They remained at a fairly
tant level from 1910 to January, 1916, at which time the range
including antitarnish paper) was 42½ to 50 cents per ream. In
mon with all other kinds of paper, they increased rapidly dur-
he first half of 1916, July prices in that year being in each instance
e than double January prices. In the latter part of 1916 they
eased a little more, but receded somewhat during 1917. During
they rose slowly, only to decrease during the early part of 1919.
ne latter part of 1919 they began to rise again, increasing almost
out a break to a range of $1.95 to $2.25 per ream in September
October, 1920. In November, 1920, they were caught in the
p which struck general commodity prices some months earlier,
they declined materially. There was a gradual decrease during
and the first half of 1922. Toward the end of the summer of
, however, all quoted prices were withdrawn in anticipation of
ncrease.

ne range of prices for blotting paper from January, 1920, to
ary, 1921, as furnished by the District of Columbia Paper
ufacturing Co., is shown in an appended table, page 17. In
ary, 1920, the range of prices for the various grades was 10¾
3 cents per pound. In August prices reached their high level,
h was maintained until October, when the range was 13¾ to 20
s. After that they decreased somewhat, the range in January,
, being 12½ to 18 cents.

ne prices of domestic filter paper now (1922) range from 22 to
ents per pound. These are approximately twice the pre-war
es.

TARIFF HISTORY.

ntil the tariff act of 1890 the grades of paper under discussion
not separately enumerated. That act placed an 8-cent per
d plus 15 per cent ad valorem duty on copying paper, filtering
r, so-called silver paper, tissue paper, and their manufactures.
act of 1894 changed the duty on these papers to 35 per cent ad
rem. The act of 1897 added bibulous, stereotype, pottery, and
e paper to the list and omitted silver paper, drawing a distinc-
between papers weighing not over 6 pounds to the ream and
r weighing from 6 to 10 pounds per ream. Six cents per pound
15 per cent ad valorem duty was levied on the lighter grade
5 cents per pound plus 15 per cent ad valorem on the heavier.
crêpe paper, filter paper, and letter-copying books, however,
the latter duty. The act of 1909 made no change in classifica-
or duty. The 1913 act abolished all weight qualification and

l the varieties in the 1897 and 1909 acts under a 30 per
ılorem duty.
)07 to 1913, under the acts of 1897 and 1909, the equivalent
m duty on tissue paper ranged from 39 to 42 per cent, and
ınd filter paper from 40 to 50 per cent, both being lowered
cent in 1913. There is no evidence that the lowering in
duced any effect on imports, for the increase in imports
3 was no greater than during the preceding years. More-
relation of imports in one year to those in another are
by the inclusion of manufactures in the figures for certain
l not in the figures for other years.

COMPETITIVE CONDITIONS.

omestic industries producing the grades of paper under dis-
are not subject to dangerous foreign competition. Imports
paper and blotting paper into the United States are almost
le and were little more before the war than they are now.
ər, domestic manufacturers have built up an export trade
al times the import trade. The United States exports tissue
n substantial amounts all over the world, including the
Kingdom, a highly competitive European market. Certain
an countries, however, particularly the United Kingdom,
ıy, and France, produce very fine tissue paper. English
)aper for carbonizing is of excellent quality, and is imported to
xtent into the United States.
ır paper, on the other hand, is largely supplied to the United
by foreign countries. Domestic manufacturers do not put
)or and care into its manufacture that some European coun-
lo. The domestic product for rough, qualitative work and
rial purpose is from the tariff standpoint almost a different
odity from the pure imported quantitative grade for chemical
ıis. Hence importations perform here the function of supple-
ng a domestic production inadequate to meet the demand for
mption—or they may even be regarded as supplying a com-
ıy not produced in the United States.

STATISTICAL TABLES.

Domestic production of tissue paper, by States, 1899–1919.

[From Federal Census.]

State.	1899		1904		1909	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Short tons.		*Short tons.*		*Short tons.*	
'ork	8,415	$768,945	18,101	$1,764,911	30,049	$2,786,101
ersey	4,480	943,877	6,162	953,022	8,939	1,296,540
ısin	2,960	250,331	5,989	571,378	10,835	988,516
husetts	2,479	416,449	2,430	419,650	(1)	(1)
lampshire	3,973	339,120	2,508	292,505	8,737	755,015
ylvania	1,377	201,747	320	31,101	(1)	(2)
cticut	1,740	283,378	2,169	406,675	2,041	438,097
nt	1,918	180,303	3,045	274,411	3,500	331,013
her	1,064	102,511	5,951	342,685	13,644	1,958,372
Total	28,406	3,486,652	43,925	5,056,438	77,745	8,553,654

cluded in "All other States."

Domestic production of tissue paper, by States, 1899–1919—Continued.

State.	1914		1919	
	Quantity.	Value.	Quantity.	Value.
	Short tons.		*Short tons.*	
New York	46,052	$3,909,858	74,256	12,927,255
New Jersey	10,414	1,674,377	6,668	1,746,448
Wisconsin	15,355	1,515,482	20,498	5,528,470
Massachusetts	8,671	1,262,594	12,511	5,450,229
New Hampshire	11,469	980,532	12,915	2,202,486
Pennsylvania	9,941	726,909	17,219	5,159,895
Connecticut	1,791	370,077	(1)	(1)
Vermont	2,202	179,284	1,836	453,370
All other	9,556	908,517	35,658	7,167,465
Total	115,401	11,535,720	190,561	40,695,523

[1] Included in "All other States."

Domestic production of tissue paper, by grades, 1919.

[From Federal Census.]

Kind or grade.	Quantity.	Value.
	Short tons.	
High grade:		
New York	6,038	$1,535,775
All other States	24,987	9,601,775
Total	31,025	11,137,550
White, colored, and waxing, total	36,545	7,644,952
Manila and No. 2 white:		
New York	14,705	2,206,958
All other States	9,280	1,392,321
Total	23,985	3,599,279
Towel and napkin, total	19,266	5,144,895
Toilet:		
New York	47,197	8,005,041
All other States	32,543	5,173,806
Total	79,740	13,178,847

Domestic production of tissue paper, by years, 1899–1921.

[From Federal Census.]

Year.	Quantity.	Value.	Year.	Quantity.	Value.
	Short tons.			*Short tons.*	
1899	28,406	$3,486,652	1914	115,401	$11,535,720
1904	43,925	5,056,438	1919	190,561	40,695,523
1909	77,745	8,553,654			

[From Federal Trade Commission.[1]]

	Short tons.		Short tons.
1917	126,286	1920	177,447
1918	143,298	1921	148,142
1919	155,400		

[1] Includes toilet, crêpe, fruit wrappers, etc.

omestic production of tissue paper, by months, 1919, 1920, and 1921.

	1919	1920	1921	Month.	1919	1920	1921
	Short tons.	*Short tons.*	*Short tons.*		*Short tons.*	*Short tons.*	*Short tons.*
.....	10,611	15,695	7,704	July.....	14,685	16,850	12,238
.....	9,432	14,745	9,372	August.....	14,508	17,159	13,734
.....	10,575	15,363	10,760	September.....	14,845	16,359	14,241
.....	10,900	16,572	9,686	October.....	16,015	13,743	14,964
.....	11,711	16,053	11,135	November.....	14,524	9,653	15,169
.....	12,867	17,165	13,304	December.....	14,727	8,090	15,835

Domestic production of blotting paper, by States, 1899–1919.

[From Federal Census.]

State.	1899		1904		1909	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Short tons.		*Short tons.*		*Short tons.*	
.....	1,807	$251,400	3,344	$373,183	5,079	$640,550
ia.....	103	12,360	1,660	198,900	[1]	[1]
tts.....	788	111,627	1,297	168,575	[1]	[1]
.....	825	74,598	1,050	134,929	[1]	[1]
.....	728	130,765	1,351	171,203	4,498	545,638
l.....	4,351	580,750	8,702	1,046,790	9,577	1,186,189

State.	1914 [2]		1919 [2]	
	Quantity.	Value.	Quantity.	Value.
	Short tons.		*Short tons.*	
nia.....				
etts.....				
.....				
.....				
al.....	14,157	$1,457,897	13,420	3,209,137

[1] Included in "All other States." [2] Detailed statistics not available.

Imports for consumption—Revenue, 1907–1921.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual or computed ad valorem rate.
COPYING, STEREOTYPE, BIBULOUS, TISSUE, AND POTTERY PAPERS.[1]						
ar:		*Pounds.*				*Per cent.*
.....	Specific and ad valorem.	1,047,354	$220,945	$94,074	$0.220	40.91
.....	.....do.....	1,010,333	235,975	92,035	.234	39.07
.....	.....do.....	1,013,650	232,703	90,345	.230	38.82
.....	.....do.....	1,208,451	276,205	108,666	.229	39.34
.....	.....do.....	1,491,564	307,329	129,427	.206	42.11
.....	.....do.....	1,392,186	285,652	120,873	.205	42.33
.....	.....do.....	1,638,239	342,485	143,526	.209	41.91
.....	.....do.[2]	306,975	69,724	27,803	.227	39.88
.....	30 per cent [3]	1,689,776	314,107	94,232	.186	30.00
.....	.....do.....	1,864,323	364,002	109,200	.195	30.00
.....	.....do.....	1,515,821	369,591	110,877	.244	30.00
.....	.....do.....	1,820,669	414,461	124,338	.228	30.00
.....	.....do.....	652,107	237,337	71,201	.364	30.00
r year:						
.....	.....do.....	397,978	149,712	44,914	.376	30.00
.....	.....do.....	683,101	396,418	118,925	.580	30.00
.....	.....do.....	855,266	458,818	137,645	.537	30.00
.....	.....do.....	1,027,966	451,802	135,541	.440	30.44

m 1907 to Nov. 3, 1913, includes copying, stereotype, tissue, pottery, and papers n. s. p. f., colored or ed, white or printed. From Nov. 4, 1913, to June 30, 1916, includes copying, stereotype, bibulous, and pottery papers, and articles manufactured therefrom. From July 1, 1916, on includes copying, ype, bibulous, tissue, and pottery papers.
y 1 to Nov. 3, 1913.
v. 4, 1913, to June 30, 1914.

Imports for consumption—Summary, 1907–1921—Continued.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual or computed ad valorem rate.
MANUFACTURES OF COPYING, STENCIL, DIPLOMA, TISSUE, POTTERY, CRÊPE AND FILTERING PAPERS.						
Fiscal year:						Per cent.
1917	30 per cent		[illegible]	[illegible]		30.00
1918	do		[illegible]	[illegible]		30.00
Calendar year:						
1918	do		[illegible]	[illegible]		30.00
1919	do		[illegible]	[illegible]		30.00
1920	do		[illegible]	[illegible]		30.00
1921	do	[illegible]	[illegible]	[illegible]		30.00
CRÊPE AND FILTERING PAPERS.						
Fiscal year:		Pounds.				Per cent.
1907	5 cents per pound plus 15 per cent.	[illegible]	[illegible]	[illegible]	[illegible]	48.18
1908	do	[illegible]	[illegible]	[illegible]	.156	47.67
1909	do	[illegible]	[illegible]	[illegible]	.148	48.68
1910	do	[illegible]	[illegible]	[illegible]	.147	48.06
1911	do	[illegible]	[illegible]	[illegible]	.145	48.58
1912	do	[illegible]	[illegible]	[illegible]	.171	44.29
1913	do	[illegible]	[illegible]	[illegible]	.176	43.53
1914	do[1]	[illegible]	[illegible]	[illegible]	.195	48.37
1914	30 per cent [2, 3]	[illegible]	[illegible]	[illegible]	.152	30.00
1915	do[2, 3]	[illegible]	[illegible]	[illegible]	.153	30.00
1916	do[3]	[illegible]	[illegible]	[illegible]	.152	30.00
1917	do	[illegible]	[illegible]	[illegible]	.488	30.00
1918	do	[illegible]	[illegible]	[illegible]	.457	30.00
Calendar year:						
1918	do	[illegible]	[illegible]	[illegible]	.527	30.00
1919	do	[illegible]	[illegible]	[illegible]	.679	30.00
1920	do	[illegible]	[illegible]	[illegible]	.358	30.00
1921	do	[illegible]	[illegible]	[illegible]	.221	30.00

[1] Includes $2 worth on which duty was remitted.
[2] Includes 429 pounds, valued at $127, on which duty was remitted.
[3] Includes articles manufactured from crêpe and filtering papers.
[4] Includes 133 pounds, valued at $147, on which duty was remitted.
[5] Includes 193 pounds, valued at $293, on which duty was remitted.

COPYING AND SIMILAR PAPERS AND MANUFACTURES OF.

[Calendar years.]

Variety and year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual or computed ad valorem rate.
		Pounds.				Per cent.
Bibulous:						
1919	30 per cent	2,385	$2,319	$696	$0.808	30.00
1920	do	35,942	4,572	1,372	.128	30.00
1921	do	29,637	5,499	1,623	.182	30.00
Copying:						
1919	do	170,183	68,313	20,494	.401	30.00
1920	do	139,483	82,870	24,861	.594	30.00
1921	do	83,179	43,928	13,178	.528	30.00
Crêpe and filtering:						
1919	do	288,890	196,066	58,820	.679	30.00
1920	do	474,059	169,623	50,887	.358	30.00
1921	do	579,478	128,280	38,484	.231	30.00
Pottery:						
1919	do	15,963	5,336	1,601	.334	30.00
1920	do	3,460	1,044	313	.307	30.00
1921	do					

Imports for consumption—Revenue, 1907–1921—Continued.

PYING AND SIMILAR PAPERS AND MANUFACTURES OF—Continued.

ety and year.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual or computed ad valorem rate.
		Pounds				*Per cent.*
	30 per cent	4,486	$4,187	$1,256	$0.933	30.00
	do	8,541	6,216	1,885	.728	30.00
	do	2,404	1,492	448	.621	30.00
	do	489,584	316,268	94,879	.646	30.00
	do	667,990	377,222	113,167	.565	30.00
	do	912,746	400,973	120,292	.439	30.00
es of (except imita- ama hats):						
	do		62,583	18,774		30.00
	do		47,922	14,377		30.00
	do		43,893	13,168		30.00
	do		655,067	196,520		30.00
	do		676,363	202,909		30.00
	do		623,975	187,193		30.00

Domestic exports of tissue and toilet paper, 1918–1921.

[Calendar years.]

Exported to—	1918	1919	1920	1921
	$7,105	$100,207	$97	$399
ngdom	26,529	183,267	283,182	178,237
	630,096	430,360	797,395	304,616
	12,164	12,137	33,228	8,811
	44,195	132,430	96,459	109,137
	72,820	149,027	280,064	71,356
	50,163	178,963	157,135	16,241
	87,942	173,998	130,866	9,759
	34,344	29,410	82,228	10,942
	4,362	30,618	26,000	3,205
dia	106,812	128,671	297,023	31,872
	55,356	50,213	84,807	5,099
	90,081	62,971	21,383	16,580
	39,951	114,675	31,602	20,832
e Islands	23,840	39,908	33,323	18,032
uth Africa	31,222	23,352	15,185	1,975
countries	126,596	216,400	309,552	99,338
al	1,443,578	2,056,607	2,654,529	906,411

le prices per ream of tissue paper [1]*—Minimum price f. o. b. New York for available date nearest 15th of month, 1910–1922.*

[From Paper Trade Journal.]

Kind or grade.	1910				1911			
	January.	April.	July.	October.	January.	April.	July.	October.
o. 1, 20 by 30 inches	(2)	(2)	(2)	(2)	(2)	(2)	$0.37½	$0.37½
o. 2, 20 by 30 inches	(2)	(2)	(2)	$0.53½	$0.32	$0.29½	.28	.28
[o. 1, 24 by 36 inches	$0.50	$0.47½	$0.45	.47½	.47½	.47½	.36	.30
	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
ish	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)

first two grades are quoted per ream of approximately 7 pounds, the last four grades per ream unds.
available.

Wholesale price per ream of tissue paper—Minimum price f. o. b. New York for available date nearest 15th of month, 1910–1922—Continued.

Kind or grade.	1912				1913			
	January.	April.	July.	October.	January.	April.	July.	October.
White, No. 1, 20 by 30 inches	$0.37	$0.37	$0.37½	$0.40	$0.40	$0.40	$0.40	$0.42½
White, No. 2, 20 by 30 inches	.27	.27	.27	.28	.28	.28	.28	.30
Manila, No. 1, 24 by 36 inches	.37	.37	.37½	.40	.40	.40	.40	.42½
Kraft	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Colored	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Antitarnish	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)

Kind or grade.	1914				1915			
	January.	April.	July.	October.	January.	April.	July.	October.
White, No. 1, 20 by 30 inches	$0.42½	$0.40	$0.40	$0.47½	$0.45	$0.40	$0.40	$0.40
White, No. 2, 20 by 30 inches	.30	.27½	.27½	.33½	.40	.40	.40	.40
Manila, No. 1, 24 by 36 inches	.42½	.40	.40	.47½	.40	.40	.37½	.37½
Kraft	(1)	.47½	.47½	.50	.52½	.45	.45	.45
Colored	(1)	(1)	.45	.55	.50	.50	.50	.50
Antitarnish	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)

Kind or grade.	1916				1917			
	January.	April.	July.	October.	January.	April.	July.	October.
White, No. 1, 20 by 30 inches	$0.45	(1)	$1.00	$1.10	$1.30	$1.30	$1.00	$0.90
White, No. 2, 20 by 30 inches	.42½	(1)	1.00	1.00	1.35	1.30	1.00	.90
Manila, No. 1, 24 by 36 inches	.42½	(1)	1.20	1.20	1.30	1.25	1.10	.90
Kraft	.45	(1)	1.00	1.00	1.40	1.35	1.20	1.10
Colored	.50	(1)	(1)	(1)	1.35	1.35	1.25	1.40
Antitarnish	(1)	(1)	(1)	(1)	(1)	(1)	(1)	1.35

Kind or grade.	1918				1919			
	January.	April.	July.	October.	January.	April.	July.	October.
White, No. 1, 20 by 30 inches	$0.80	$0.95	$1.10	$1.40	$1.20	$1.00	$0.95	$1.15
White, No. 2, 20 by 30 inches	.80	.85	1.10	1.25	1.25	.98	.90	1.00
Manila, No. 1, 24 by 36 inches	.80	.85	1.10	1.25	1.25	1.00	.95	1.00
Kraft	1.00	(1)	(1)	(1)	1.50	1.15	1.05	1.10
Colored	1.25	1.25	1.50	1.50	1.50	1.25	1.50	1.60
Antitarnish	1.25	1.25	1.35	1.50	1.50	1.25	1.20	1.20

Kind or grade.	1920				1921			
	January.	April.	July.	October.	January.[4]	April.	July.	October.
White, No. 1, 20 by 30 inches	$1.15	$1.45	$2.00	$2.00	$1.25–$1.80	$1.20	$0.90	$0.70
White, No. 2, 20 by 30 inches	1.00	1.50	1.85	1.95	1.00– 1.60	1.10	.....	.....
Manila, No. 1, 24 by 36 inches	1.00	1.50	1.85	1.95	1.25– 1.60	1.00	.....	.70
Kraft	1.10	1.40	2.00	2.00	1.80– 2.00	1.30	.....	.....
Colored	1.60	1.60	2.00	2.00	1.80– 2.00	1.55	1.10	1.10
Antitarnish	1.20	1.45	2.25	2.25	1.80– 2.25	1.50	1.50	1.50

[1] Not available.
[3] Nominal.
[4] The lower prices for each grade in January, 1921, are actual quotations by manufacturers. The higher prices are the minimum prices quoted by the Paper Trade Journal.

rrice per ream of tissue paper—Minimum price f. o. b. New York for available date nearest 15th of month, 1910–1922—Continued.

Kind or grade.	1922			
	January.	April.	July.	September.
, 20 by 30 inches	$0.75	$0.75	$0.75	(a)
, 20 by 30 inches	.75	.75	.75	(a)
, 24 by 36 inches				
	1.00	1.00	1.00	(a)
	.825	.75	.75	(a)

ns withdrawn.

Wholesale price per pound of blotting paper, 1920 and 1921.

[Data from District of Columbia Paper Manufacturing Co., Washington, D. C.]

Kind or grade.	January, 1920.	October, 1920.	January, 1921.
eap grade):	*Cents.*	*Cents.*	*Cents.*
	10½	13½	12½
	11	14	12½
medium grade):			
	14	18	16
	14½	18½	16½
h grade)	16	20	18

Rates of duty, 1890–1913.

Par.	Tariff classification or description.	Rate of duty.
419	Papers known commercially as copying paper, filtering paper, silver paper, and all tissue paper, white or colored, made up in copying books, reams, or in any other form.	8 cents per pound and 15 per cent ad valorem.
307	Papers known commercially as copying paper, filtering paper, silver paper, and tissue paper, white, printed, or colored, made up in copying books, reams, or in any other form.	35 per cent ad valorem.
397	Papers commonly known as copying paper, stereotype paper, paper known as bibulous paper, tissue paper, pottery paper, and all similar papers, white, colored or printed, weighing not over six pounds to the ream of four hundred and eighty sheets, on a basis of twenty by thirty inches, and whether in reams or any other form.	6 cents per pound and 15 per cent ad valorem.
	If weighing over six pounds and not over ten pounds to the ream, and letter copying books, whether wholly or partly manufactured.	5 cents per pound and 15 per cent ad valorem.
	Crêpe paper and filtering paper	5 cents per pound and 15 per cent ad valorem.
410	Papers commonly known as copying paper, stereotype paper, bibulous paper, tissue paper, pottery paper, and all papers not specially provided for in this section, colored or uncolored, white or printed, weighing not over six pounds to the ream of four hundred and eighty sheets, on the basis of twenty by thirty inches, and whether in reams or any other form.	6 cents per pound and 15 per cent ad valorem.
	If weighing over six pounds and less than ten pounds to the ream, and letter copying books, whether wholly or partly manufactured.	5 cents per pound and 15 per cent ad valorem.
	Crêpe paper and filtering paper	5 cents per pound and 15 per cent ad valorem.
	Provided, That no article composed wholly or in chief value of one or more of the papers specified in this paragraph shall pay a less rate of duty than that imposed upon the component paper of chief value of which such article is made.	
323	Papers commonly known as copying paper, stereotype paper, bibulous paper, tissue paper, pottery paper, letter-copying books, wholly or partly manufactured, crêpe paper and filtering paper, and articles manufactured from any of the foregoing papers or of which such paper is the component material of chief value.	30 per cent ad valorem.

COURT AND TREASURY DECISIONS.

Crêpe paper applies to paper subjected to a crêping process, and a paper made by that process and resembling crêpe paper generally, but somewhat heavier, and treated with sizing for waterproof purposes, is dutiable as crêpe paper. (Fiegel *v.* United States, 167 Fed. 537.)

Hygeia paper used for wrapping straws and toothpicks was held properly classified as cigarette paper under the act of 1897. (Hygeia Antiseptic Toothpick Co. *v.* United States, 1 Ct. Cust. Appls. 497.)

The proviso to paragraph 410 of the act of 1909 was held to cover all articles composed of tissue paper, and by providing that such articles should pay no less rate of duty than that imposed upon the component paper of chief value of which any such article was made, classification of tissue-paper fans was held to be proper under that paragraph. (United States *v.* Mason, 2 Ct. Cust. Appls. 236, of 1911.)

Thin, unsized paper of fine, soft texture, silky to the touch, translucent, and to a limited extent transparent, used for wrapping articles, especially those liable to tarnish, commonly known to the trade as tissue paper, weighing 10¼ to 10½ pounds per ream of 480 sheets, 20 by 30 inches, although much heavier than ordinary tissue paper, was held more specifically provided for as tissue paper in paragraph 323 of the act of 1913 than as wrapping paper in paragraph 328, or as paper not specially provided for in paragraph 332. (Germania Importing Co. *v.* United States, 6 Ct. Cust. Appls. 467, of 1915. Paper for copying paper, not ready for use as imported, has also been held dutiable as tissue paper and not as copying paper (Abstract 37732, of 1915; followed in Abstract 40039, of 1916); so has "tea papers" used in making hygienic napkins (Abstract 29900, T. D. 32842, of 1912). The provision for "tissue paper" is more specific than that for "wrapping paper" in paragraph 324. (G. A. 7631, T. D. 34904, of 1914.) Heavy crinkled paper, used as embossing stock where high relief is to be obtained, is crêpe paper. (Abstract 32597, T. D. 33511, of 1913.) Round-cut bowl paper used in embossing machines and disks cut from filtering paper and ready for use in filtering were held dutiable as filtering papers. (Abstract 32596, T. D. 33511, of 1913; Abstract 24511, T. D. 31182, of 1911.) Litmus paper in sheets is dutiable as bibulous paper under paragraph 323. (T. D. 36274, of 1916.) Books of litmus paper, consisting of strips of litmus paper, about 2½ inches by ⅜ inch, stitched together at one end and having a surface-coated paper cover, were held dutiable under the act of 1913, as manufactures of bibulous paper or of which such paper is the component material of chief value. (T. D. 36519, of 1916.) Imitation Panama hats made of strips of tissue paper rolled and cut so as to imitate grass or straw were held dutiable under the act of 1913, as articles manufactured from tissue paper. (T. D. 36398, of 1916; Abstract 41839, of 1918.)

Other articles held dutiable under paragraph 323 as manufactures of tissue or crêpe paper are hats, caps, and boxes of tissue or crêpe paper (Abstracts 38875, of 1915, and 39248, 39509, and 40312, of 1916), fans of tissue paper (Abstract 39457, of 1916), and so-called crackers or snappers of crêpe, tissue, and ordinary paper (Abstract 40171, of 1916).

ed "day shells" composed in chief value of handmade tissue
ere held to be dutiable as manufactures of paper not spe-
ovided for under paragraph 332 of the act of 1913 rather
ler paragraph 323 as articles of tissue paper, the Board of
Appraisers holding the fact that the tissue paper, the most
component in the articles, was handmade excluded it from
ph 323. (G. A. 8492, T. D. 38952, of 1921; followed in
t 44924, of 1922.)

PARCHMENT AND VELLUM.

ACT OF OCTOBER 3, 1913.

PAR. 568. Parchment and vellum [Free].

GENERAL INFORMATION.

DESCRIPTION AND DOMESTIC PRODUCTION.

Parchment is the skin of sheep, goats, lambs, young calves, and other animals, prepared and polished with pumice stone for writing, painting, engraving, drawing, expensive binding, etc. In the United States it is used to a considerable extent for diplomas. A cheap grade is also used for making drumheads. Vellum was originally made of calfskin only. Now the term is used for fine parchment made from skins of calves, kids, and dead-born lambs. Parchment and vellum were among the earliest writing materials.

The domestic production of parchment and vellum in the United States is very small, being confined apparently to the cheaper grades used for drumheads and for bookbinding. All the finer grades are imported.

IMPORTS.

As shown in an appended table, page 21, imports of parchment and vellum were fairly constant in value at a range of $50,000 to $75,000 per year during the fiscal years 1907 to 1917. In the calendar year 1918 they dropped to $17,425. In the calendar years 1920 and 1921 they amounted to $144,113 and $67,937, respectively.

Before the war England was the source of practically all of the imported parchment and vellum. Germany, France, and Russia in Europe were the only other countries that sent appreciable quantities to the United States. Figures for imports by countries since 1914 are not available. Practically all imports into this country come from England and France.

TARIFF HISTORY.

By the act of 1883 and by every act since that time both parchment and vellum have appeared on the free list.

Statistical Tables.

Imports for consumption—Parchment and vellum, 1907–1921.

r:		Fiscal year—Continued.	
	$72,726	1916	$74,644
	65,685	1917	72,626
	49,612	1918	32,685
	62,825	Calendar year:	
	57,565	1918	17,425
	59,759	1919	49,583
	59,570	1920	114,113
	54,800	1921	67,937
	63,306		

Imports, by countries—Parchment and vellum, 1910–1914.

[Fiscal year.]

Imported from—	1910	1911	1912	1913	1914
	$2,444	$1,044	$2,000	$3,161	$2,250
	2,398	5,095	6,580	6,439	3,327
urope	5,657	3,022	2,133	4,885	726
	51,810	47,870	48,721	44,981	48,839
untries	516	534			77
	62,825	57,565	59,434	59,466	55,219

Rates of duty on parchment and vellum, 1883–1913.

ır.	Tariff classification or description.	Rate of duty.
55	Parchment	Free.
13	Vellum	Do.
72	Parchment and vellum	Do.
79	....do	Do.
84	....do	Do.
86	....do	Do.
88	....do	Do.

Court and Treasury Decisions.

rovisions for "parchment and vellum" have been held not to such as are used for manuscripts and similar purposes, but le qualities used for various other purposes such as for binding overing bottle stoppers, and for drumheads and lamp shades. 562, T. D. 39231, of 1922, following G. A. 5303, T. D. 24303,

The board distinguished United States *v.* Lyon (4 Ct. Cust. 84, of 1913), in which it was held that drumheads were as parts of musical instruments under paragraph 467 of the 09 rather than as dressed skins under paragraph 451 of that claim was made in the Lyon case that the merchandise ave been classified as parchment.

able parchment was held to be synonymous with parchment d dutiable accordingly under paragraph 324 of the act of her than exempt from duty under paragraph 568 as "parchd vellum." (G. A. 7736, T. D. 35526; Abstract 38609, of

PARCHMENT PAPER AND IMITATION PARCHMENT PAPER.

ACT OF OCTOBER 3, 1913.

PAR. 324. * * * parchment paper, * * * 25 per centum ad valorem; * * * grease-proof and imitation parchment papers which have been supercalendered and rendered transparent or partially so, by whatever name known, all other grease-proof and imitation parchment papers, not specially provided for in this section, by whatever name known, * * * 35 per centum ad valorem; * * *

SUMMARY.

These varieties of paper are specialties, and are produced in very small quantities compared with such grades as newsprint, wrapping, and writing paper. The annual production of parchment paper (vegetable parchment) in the United States amounts to about 12,000 tons; that of imitation parchment paper is not known. The industry is located almost exclusively in Pennsylvania, New York, Massachusetts, Michigan, Wisconsin, and a few neighboring States. There are six parchment-paper mills. In the calendar year 1920 imports amounted to four-fifths of 1 per cent of the domestic production of parchment paper. On the other hand, between 1917 and 1920 four of the six parchment-paper mills exported from 11 to 17 per cent of total domestic production. The United States imports a negligible amount of imitation parchment paper (66 tons in 1920) compared with domestic production. Europe is the main source.

There is no tariff problem at present in these grades of paper. Imports are so small that they are no menace to the domestic industry. The problem of what foreign competition the future will bring forth is inextricably bound up with the present chaotic conditions of production, finance, and exchange in Europe.

Summary table—Parchment paper.

	Domestic production.	Imports for consumption.	Domestic exports.[1]	Ratio to production.	
				Imports.	Exports.
Calendar year:	*Short tons.*	*Short tons.*	*Short tons.*	*Per cent.*	*Per cent.*
1915	13,527	.....	.....	.....	.....
1916	14,504	.....	.....	.....	.....
1917	12,202	.....	2,070	.....	17.0
1918	12,539	.....	1,349	.....	10.8
1919	11,732	.....	1,392	.....	11.9
1920	10,834	84	1,209	0.77	11.2
1921	.....	63	.....	.....	.....

[1] By 4 out of 6 mills in United States.

Summary table—Parchment paper—Continued.

	Imports for consumption.	Amount of duty.	Value per unit of quantity.	Equivalent ad valorem rate.
	Value.			*Per cent.*
	$51,483	$12,870		25
	29,601	7,400		25
	18,522	4,630		25
	27,379	6,837		25
	27,104	6,776		25
	55,214	13,804		25
	28,213	7,053		25
	67,595	16,899	$0.348	25
	39,439	9,860	.311	25

, to June 30, 1914.

General Information.

DESCRIPTION.

ıent paper.—Parchment paper is an unsized or waterleaf ıade preferably of cotton rags, vegetable fiber, or sulphite lp which has been treated with dilute sulphuric acid. It ts name from the fact that in many ways its qualities are o those of parchment, which is the prepared and polished heep or goats. It is dull in finish, dense, hard, and hornlike; ase proof, waterproof, translucent, and to a limited extent ent. Its chief uses are for drawing, bookbinding, as covers s in medicine bottles, for filtering in sugar manufacture, and ng gutta-percha, as a wrapping paper for greasy substances various food products, and as a casing for sausages.

nized paper, another type of parchment paper, is produced ınner similar to the method of producing parchment paper but is treated with zinc chloride instead of with sulphuric This paper is much used, a number of sheets being pressed r in the manufacture of trunks, tubs, wastebaskets, trucks, Villesden paper is a variety of parchment paper made by paper through an ammoniacal solution of copper oxide.

table parchment is synonymous with parchment paper.

term "parchment paper" is applied also to a high-class all-rag ; paper, much like a bond paper. Such paper, however, is ıported as parchment paper and is not considered in this . (See Court and Treasury decisions, page 34.)

ation parchment paper.—Grease-proof or imitation parchment le of sulphite wood pulp, preferably that produced by the ıerlich or slow-cook process. In the course of manufacture ock is subjected to an unusually extended process of beating, reduces it to a gelatinous condition. The first finished product process is a paper with a dull finish, dense and hard, resembling ment paper in various ways, especially in the characteristic ke appearance above noted. The paper is not waterproof and partially grease proof—that is, it is not entirely impervious to , but nevertheless it has the quality of resisting grease to a d extent. The paper is more tenacious than sulphite paper

not so treated; it is translucent and imperfectly transparent. A part of the paper thus produced is afterwards moistened and run through supercalender rollers under heat and pressure; it loses thus its dull finish and becomes very glossy and more perfectly transparent.

The dull, uncalendered kind is known variously in the trade as imitation parchment, grease proof, and pergamyn. The calendered, transparent kind is usually called glassine, parchmyn, or japanin paper, although sometimes, as in the tariff act of 1913, it is also called grease proof. Both kinds are used as a wrapping for cakes and similar articles which do not require a perfectly grease-proof covering. The supercalendered variety is more useful, however, for the manufacture of an outer wrapping for bottles and boxes, through which labels may be read, as the transparent material for "window envelopes," and for making sanitary protectors for telephone receivers.

DOMESTIC PRODUCTION.

The parchment paper and imitation parchment industries are not extensive compared with other branches of the paper industry. Their products are specialties, produced in relatively small amounts.

MATERIALS.

The chief materials of the parchment-paper industry are cotton rags and sulphite wood pulp. Formerly unsized rag stock was used almost exclusively, but has now been largely supplanted by bleached sulphite stock. Such additions as mechanical wood pulp should be avoided, for they are liable to char or burn and thereby to cause the finished product to be full of tiny holes. Sulphuric acid and ammonia are the ordinary chemicals used. Zinc chloride and sometimes nitric and sulphuric acids and dextrin are used in making vulcanized paper. Copper oxide is used in making Willesden paper. Almost all these materials are produced in the United States in such amounts that the relatively small quantities needed in this industry are easy to obtain. Part of the sulphite pulp supply is imported from Canada and from Sweden, free of duty. (See survey on wood pulp.) Rags are also imported to some extent, free of duty. Soda ash, lime, bleach, and acid-proof coloring matters are used in making the untreated waterleaf paper.

Sulphite wood pulp is almost the sole constituent of imitation parchment paper. Both for parchment and for imitation parchment papers it is desirable to use the Mitscherlich variety of sulphite pulp. This is a superior grade, cooked longer and more slowly than the ordinary variety.

There appears thus to be no tariff problem in obtaining the raw materials of parchment and imitation parchment papers.

METHODS OF PRODUCTION.

Parchment paper.—Paper for parchmentizing is made in the beater and in the refining engine and on the Fourdrinier machine in almost the same way as any other kind of paper. (See survey on printing paper.) The sole difference is in the fact that sizing, loading, and coloring materials are not used. The only material going into the beater is the pulp—either rag or sulphite.

vaterleaf (unsized) paper has come off the Fourdrinier passed as a continuous sheet through a bath of acid of rength at a speed which insures the correct period of As the treated paper leaves the bath it passes through ls which remove the excess of acid. The paper is then a series of tanks containing fresh water, the last traces neutralized by small amounts of ammonia or some other in the last washing tank. The wet parchment is passed ers and dried over steam-heated cylinders. It must be ly stretched as it dries, because it shrinks enormously, otherwise become cockled and uneven.

eets of parchment paper are frequently made by passing s of paper through the acid bath and bringing them tween the rollers before washing. The sheets unite when ether; the remainder of the process is the same as that or single sheets.

chmentizing process increases the strength of the paper ur times and the density about 30 per cent.

ed fiber is made by passing a continuous sheet of paper bath of strong zinc chloride, which causes the cellulose to nd partially gelatinize. As a large excess of strong zinc s necessary, the process is rendered commercially possible he careful recovery of the zinc from the washing waters, submitted to chemical treatment. The vulcanized product ently treated with nitric acid or with a mixture of nitric uric acids to make it waterproof. Dextrin is often used to e chemical action that necessary manipulation of the mate- re washing it may be possible. A number of sheets are pressed together while the paper is in a colloidal (jellylike) , prior to washing. Finally, the excess of zinc and acid completely removed.

den paper is made by passing paper through an ammoniacal of copper oxide, as a result of which the paper is impregnated per oxide and a superficial gelatinization of the surface takes The copper oxide helps to preserve the paper and renders it oof.

sulphocyanate process of making parchment paper has just veloped. Instead of sulphuric acid or chloride of zinc, solu- metallic sulphocyanates are used, the process of immersion he same as the one already described. The same sort of paper . One sulphocyanate or a combination of sulphocyanates of t metals may be used. The sulphocyanates of calcium, mag-, strontium, and lithium when used alone produce satisfactory . Mercuric sulphocyanate may be used to good advantage in ation with one of the sulphocyanates just mentioned, partic- calcium sulphocyanate. The addition of calcium chloride or other nonactive salt helps in dissolving the sulphocyanate. imes acetic acid is added to acidify the solution.

canized paper is produced also by this process; it receives onal treatment after the parchment paper itself is made.

itation parchment paper.—The essentials of the process of making tion parchment paper have already been described. Instead of made by applying special chemical processes to ordinary un- paper, as in the case of real parchment paper, imitation parch-

ment paper receives its peculiar characteristics direct from the beating process. Sulphite pulp is placed in the beater and allowed to circulate much longer than is required for the ordinary varieties of paper. The knives of the beater roll are kept dull, so that there is a rubbing and crushing, and not a cutting effect on the fibers. Because of this prolonged beating, the fibers undergo a process of hydration or water absorption that imparts a gelatinous consistency to them. This hydrated fiber is run off on the Fourdrinier paper machine in the usual way. If the beating process is carried to its fullest extent, the fibers are so completely hydrated that their individual structure is entirely broken down and they become cellulose jelly, which agglomerates and hardens on drying to the consistency of bone.

As already noted, a part of the imitation parchment paper is afterwards moistened and run through supercalender rolls under heat and pressure, thus becoming transparent.

Organization.

In January, 1921, there were six mills carrying on the parchmentizing process in the United States with a capacity of 110 tons per day. At that time, they were operated at only 45 per cent of capacity. According to the manufacturers, only four mills produce the untreated waterleaf paper for parchmentizing. In January, 1921, these were operating at 62 per cent of their daily capacity of 90 tons. A number of concerns in addition to the six referred to reported in 1920 that they were producing parchment paper. It appears probable, however, that what they called parchment paper was in reality a variety of high-grade writing paper, and not parchment paper in the sense of an acid-treated waterleaf paper. Paper of this sort is discussed in the survey on fine paper and envelopes.

The capital invested in four out of the six parchment paper mills from 1916 to 1919 was as follows:

1916	$3,209,000
1917	3,638,000
1918	4,826,000
1919	5,038,000

Imitation parchment paper is produced by nine concerns. Eight of these nine produce glassine, the calendered variety; greaseproof, the uncalendered kind, is produced by seven firms; six of the nine, of course, produce both kinds. Imitation parchment is the staple product of seven out of the nine concerns.[1]

The imitation parchment paper manufacturers are organized in the Glassine and Greaseproof Paper Manufacturers' Association.

Geographical Distribution.

Parchment paper is produced in Kalamazoo, Mich.; West Carrollton, Ohio; Passaic, N. J.; Glen Mills, Pa.; and West Conshohocken, Pa. Glassine, or calendered imitation parchment paper, is produced in Pennsylvania, New York, Massachusetts, New Jersey, Indiana, Wisconsin, and Oregon. Greaseproof paper is produced in the same States as glassine, except that none is made in New Jersey.

[1] Lockwood's Directory of Paper and Allied Trades.

HISTORY OF THE INDUSTRY.

ment paper.—According to manufacturers, since 1885, 27 ent paper plants have been established, only 6 of which have d; this is attributed in part to fear of German competition.

DOMESTIC OUTPUT.

domestic output of vegetable parchment is, on the average, 2,000 tons per year. This production supplies practically the lemand for consumption, imports in 1920 amounting only to 1 per cent of domestic production. The following table shows duction of parchment paper (vegetable parchment) from 1915).[2]

	Pounds.
015	27,053,733
016	29,008,485
017	24,407,430
018	25,078,683
019	23,464,960
920	21,668,445

figures are available for the production of imitation parchment Its production is reported monthly to the Federal Trade ission, but the figures are not segregated, being included in ;ures for wrapping paper.

COST OF PRODUCTION.

nparative statistics of production costs here and abroad are not ible. However, according to figures compiled by the vegetable ment manufacturers from income-tax reports, the average do- c cost of production of 1,000 pounds of parchment paper ased from $74.62 in 1915 to $200.88 in 1920, and the cost of ead and selling from $5.32 to $20.15. The total cost of putting the market thus increased between 1915 and 1920 from $79.95 20.90 per 1,000 pounds. In the same period the average selling increased from $83.33 to $225. According to these figures the profit, in percentages of the price received, was 4 per cent in , 15 per cent in 1916, 15.8 per cent in 1917, 12.3 per cent in 1918, per cent in 1919, and 2 per cent in 1920.

DOMESTIC EXPORTS.

rchment paper.—In 1917 four out of the six parchment paper s exported 17 per cent of the total parchment paper output of United States. From 1918 to 1920 the proportion of total pro- tion exported by the four mills averaged slightly over 11 per cent. amounts of these exportations are shown below:

	Short tons.
1917	2,070
1918	1,349
1919	1,392
1920	1,209

igures furnished by manufacturers in brief filed with the Committee on Ways and Means.

The manufacturers state that exports of parchment paper have been made in recent years to the British Isles, France, Belgium, Egypt, India, South Africa, Australia, New Zealand, Japan, and China, all of which markets, except France and Belgium, were supplied almost exclusively by Germany before the war.

FOREIGN PRODUCTION.

Separate figures are not available. The following table, however, shows the number of mills in the different countries manufacturing parchment and imitation parchment paper in 1920, as reported to the Papermakers' Directory of all nations:

Germany	38	Holland	3
France	29	Australia	2
United States	19	Canada	2
United Kingdom	18	Russia	2
Norway	9	Spain	2
Belgium	6	Denmark	1
Sweden	6	Poland	1
Italy	5	Switzerland	1
Finland	5	Portugal	1
Czechoslovakia	3		

The parchment paper manufacturers of the United States state that their potential foreign competitors in the order of greatest tonnage are Germany, Austria, Belgium, and France. Belgium manufactures a very fine grade of parchment paper, which is probably superior to anything made in the United States.

IMPORTS.

Parchment paper.—Imports of parchment paper in the calendar year 1920 amounted to only 0.77 of 1 per cent of domestic production. Appended tables, page 32, show imports for consumption of parchment and imitation parchment papers from 1907 to 1921. Under the acts of 1897 and 1913 the two varieties were separated, but under the act of 1909 they were reported jointly. Imports of parchment paper from 1902 to 1909 averaged between 100 and 150 tons per year. From then until 1920 it is impossible to determine the quantity imported, though the amounts were less during the war than previous to 1910. In 1920 imports of parchment paper amounted to 84 short tons, valued at $61,806; in 1921 they were 63 tons, valued at $39,439.

Statistics of imports of parchment paper were compiled by countries up to 1906, after which they were discontinued. Belgium was the most important source, sending approximately half the imports to the United States. Germany, Austria-Hungary, France, and the United Kingdom ranked next. Imports during these years averaged a little under 150 tons per annum.

Imitation parchment paper.—Imports of imitation parchment have fluctuated greatly, as have also the relative proportions of imports of the calendered and uncalendered varieties.

In the fiscal year 1911 more than 4,000 tons of imitation parchment paper (including what was probably a very small proportion of real parchment paper) were imported. In the calendar years 1918 and

y 17 and 78 tons, respectively, were imported. In the year 1920, 66 tons were imported. In 1921 imports increased ons. Under the act of 1909 from the fiscal year 1910 to year 1913 the supercalendered grade (glassine) represented o-thirds of the imports. Suddenly, in the fiscal year 1914 ortion changed, very small amounts of glassine having been since the act of 1913 went into effect. Imports of grease- per also greatly decreased after 1915, but not as much as f glassine. In 1921 imports of grease-proof paper amounted ns and those of glassine to 8 tons.

PRICES.

ient paper.—The following table, compiled by the manufac- ows the great decline in the price of parchment paper from the five-year period preceding the war, and its steady rise 5:

[Per 100 pounds.]

Year.	High.	Low.	Average.
			$27.00
			12.00
			8.60
			7.80
	$8.80	$8.00	8.33
	11.50	9.00	11.60
	16.80	14.00	15.30
	18.75	14.90	16.85
	19.45	15.65	17.55
	26.07	18.97	22.50

9 the average price (exclusive of duty) paid for imported at paper was $17.50 per 100 pounds or twice the average price; in 1920 the imported grade averaged $37 per 100 exclusive of duty) or nearly twice the domestic price. Im- uld thus appear unimportant, before the war or at the present a factor in price-cutting in the United States.

TARIFF HISTORY.

he tariff act of 1894 neither parchment paper nor imitation at paper was separately enumerated in the tariff. In 1894 cent ad valorem duty was imposed on parchment paper. of 1897 imposed a specific duty of 2 cents per pound plus a ent ad valorem duty on parchment paper; the 1909 act d this rate. Under the act of 1897 the ad valorem equiva- was considerably lower than the ad valorem duty under f 1894, averaging about 21 per cent for the fiscal years 1907 Under the act of 1909 the equivalent ad valorem rate can gregated.

t of 1909 first separately enumerated imitation parchment rouping it with parchment paper and imposing the same nts per pound plus 10 per cent ad valorem) on both varieties. ated the supercalendered grades of both parchment and parchment paper grouped together from those not super- d. This worked out as a great increase over the 25 per

cent rate of 1897. Although parchment paper and imitation parchment paper are not separated in the import statistics, the former was undoubtedly such a small percentage of the total that the computed ad valorem equivalent rate on the two combined means practically the equivalent ad valorem rate on the imitation grade alone. In any case, the low equivalent rate (about 21 per cent) on parchment paper up to 1909 means that its inclusion with imitation parchment would tend to pull down the equivalent rate on the two combined, as far as it had any effect. The equivalent ad valorem rate, then, on imitation parchment paper, both supercalendered and not supercalendered, under the tariff act of 1909, averaged nearly 50 per cent.

The 1913 act decreased this rate to 35 per cent ad valorem. It imposed a 25 per cent ad valorem duty on parchment paper. Judging from the equivalent ad valorem rate of 2 cents per pound plus 10 per cent ad valorem duty in 1909 (21 per cent) when parchment paper was last separately reported, this 25 per cent rate was an increase.

It will be noted that in 1897 the rates of the two varieties crossed each other. Up to 1894 they were the same; by the act of 1894 the duty on parchment paper was greater than that on imitation parchment paper. By the act of 1897 and the acts since then the duty on imitation parchment paper has been the larger one.

Relation of tariff to imports.—Parchment paper has had a very uniform rate of duty. Its imports, small in amount, have not been visibly affected one way or the other by changes in rates. In imitation parchment the only change since 1907 in the rate of imports at the time of a change in tariff has been that following the tariff act of 1913, when imports of nonsupercalendered imitation parchment suddenly more than doubled in amount over the previous two years. However, the 1911 imports had been as large as the 1914 imports. Moreover, simultaneously imports of the supercalendered variety dropped to almost nothing, although the war did not break out until nearly a year later. Hence the conclusion is that the tariff has had very little to do with the amount of imports of imitation parchment paper.

COMPETITIVE CONDITIONS.

The competitive situation in parchment paper and imitation parchment paper is similar to that existing in fine paper and in wrapping paper. Before the war the United States imported significant but not large amounts of imitation parchment paper from Europe. But imports have since decreased to practically nothing. Imports of parchment paper into the United States have always been almost negligible. Whether in the future the United States need fear competition is problematical. Present conditions of production and exchange are so unsettled abroad that no one can do more than guess as to what Europe will do in international paper trade. Labor costs in Europe have reached what is probably a permanently higher status compared with their former relation to United States labor costs. Belgium, formerly the most important outside source of parchment paper, has done excellent work in reorganizing her industries since the war. Certain grades of Belgian parchment paper are of better quality than anything made in the United States, and it is likely that to some extent, Belgium will expand her market in the United States.

ıent paper.—The fact that in 1920 imports of parchment ıounted to only four-fifths of 1 per cent of domestic pro- and that out of six companies producing four companies ɔorted 11 per cent of total American production, points to g international competitive position of the American parch- ɔer industry. Although the Germans have made consider- ress in manufacturing parchment paper, they have not been uild up an export trade to the United States, even though under the acts of 1897 and 1909 was lower than under the 13. Before 1907, when imports by countries were separately ermany was of much less importance than Belgium as a imported parchment paper. During the five years from 1906, 46 per cent of the imports into the United States m Belgium and only 21 per cent from Germany.

he fact that in 1909 the price paid for imported parchment xclusive of duty) was twice the average domestic price by the manufacturers, and in 1920 was nearly twice the price, indicates that imports have little effect in depressing prices.

ary.—Hence the question of competition in parchment and ı parchment papers can be summed up by noting that (1) ıpetition was not so great as to be dangerous; (2) present ion is practically zero; (3) future competition depends on which are constantly shifting; (4) as far as the effect of ctors can be foreseen, it will be a number of years at least ipments to the United States will approximate pre-war levels.

Statistical Tables.

Imports of parchment paper, by countries, 1902–1906.

[Fiscal years.]

mported from—	1902		1903		1904	
	Pounds.	Value.	Pounds.	Value.	Pounds.	Value.
gary	9,156	$2,710	5,400	$1,458	31,505	$4,628
	127,118	27,751	135,011	28,380	158,231	31,288
	29,148	3,609	10,032	1,995	3,484	902
	69,634	9,709	83,451	11,113	65,244	7,483
	1,923	716	29,373	3,053	1,936	478
gdom	23,254	2,947	18,082	3,050	15,138	2,484
					29,160	379
ntries	41	13				
	260,274	47,455	281,349	49,049	309,698	47,642

Imported from—	1905		1906	
	Pounds.	Value.	Pounds.	Value.
gary	74,057	$8,009	58,240	$6,502
	99,191	20,130	124,644	26,182
	14,696	3,110	23,125	4,063
	22,727	2,236	53,476	4,430
	4,072	607	3,367	595
gdom	43,699	5,015	16,282	3,012
	2,795	325	1	3
ntries	484	305	2,472	98
	261,721	39,737	281,877	44,885

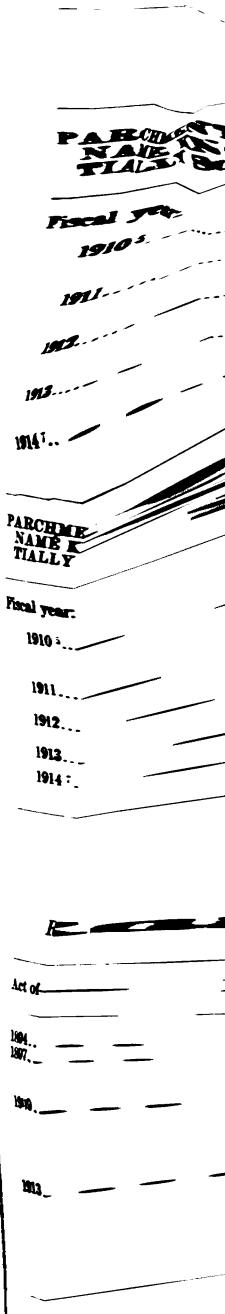
Imports for consumption—Revenue, 1907–1921.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual or computed ad valorem rate.
			PARCHMENT PAPER.			
		Pounds.				*Per cent.*
.....	2 cents per pound plus 10 per cent.	254,830	$42,817	$9,378	$0.168	21.90
.....	do	221,743	42,168	8,651	.190	20.52
.....	do	193,331	33,839	7,250	.175	21.43
.....	25 per cent		51,483	12,870		25.00
.....	do		29,601	7,400		25.00
.....	do		18,522	4,630		25.00
.....	do		27,349	6,837		25.00
.....	Free [2]		30			
.....	25 per cent		27,104	6,776		25.00
r:						
.....	do		55,214	13,804		25.00
.....	do		28,213	7,053		25.00
.....	do	167,320	61,806	15,452	.370	25.00
.....	do	126,698	39,439	9,860	.311	25.00
	ROOF AND IMITATION PARCHMENT PAPERS BY WHATEVER NAME KNOWN RCALENDERED AND RENDERED TRANSPARENT OR PARTIALLY SO.					
.....	35 per cent	70,071	$4,271	$1,494	$0.061	35.00
.....	Free [2]	14,023	575		.041	
.....	35 per cent	24,672	1,673	585	.068	35.00
.....	Free [2]	7,449	328		.044	
.....	35 per cent	57,576	3,913	1,369	.068	35.00
.....	Free [2]	525	65		.124	
.....	35 per cent	1,838	392	137	.213	35.00
r:						
.....	do	18	6	2	.333	35.00
.....	do	465	484	169	1.04	35.00
.....	do	23,977	2,967	1,038	.124	35.00
.....	do	16,530	5,125	1,794	.310	35.00

1913, to June 30, 1914. [2] For use of United States. [3] Sec. IV–M, act of Oct. 3, 1913.

ROOF AND IMITATION PARCHMENT PAPER, BY WHATEVER NAME KNOWN, PERCALENDERED AND RENDERED TRANSPARENT OR PARTIALLY SO.

		Pounds.				*Per cent.*
.....	35 per cent	3,927,156	$200,332	$70,332	$0.051	35.00
.....	do	3,874,485	198,102	69,335	.051	35.00
.....	do	629,433	42,064	14,722	.067	35.00
.....	Free [2]	4,415	222		.050	
.....	35 per cent	695,724	70,493	24,672	.101	35.00
.....	do	287,212	26,746	9,361	.093	35.00
r:						
.....	do	34,741	8,231	2,881	.237	35.00
.....	do	155,897	32,449	11,357	.208	35.00
.....	35 per cent, less 20 per cent. [4]	13	10	3	.769	28.00
.....	35 per cent	108,510	18,912	6,619	.174	35.00
.....	do	572,886	56,399	19,740	.098	35.00



Imports for consumption—Revenue, 1907–1921—Continued.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual or computed ad valorem rate.
ENT, GREASE-PROOF, AND IMITATION PARCHMENT PAPERS, BY WHATEVER KNOWN, SUPERCALENDERED AND RENDERED TRANSPARENT OR PARSO. (Act of 1909.)						
:		*Pounds.*				*Per cent.*
.....	2 cents per pound, plus 10 per cent.	3,366,906	$169,333	$84,271	$0.050	49.76
	Free [6]	5,326	173	.....	.032	.....
.....	2 cents per pound, plus 10 per cent.	4,861,874	226,708	119,908	.047	52.90
	Free [6]	13,718	486	.....	.035	.....
.....	2 cents per pound, plus 10 per cent.	4,170,256	213,266	104,731	.051	49.11
	Free [6]	1,227	72	.....	.058	.....
.....	2 cents per pound, plus 10 per cent.	3,093,719	173,219	79,196	.963	41.61
	Free [6]	17,660	1,152	.....	.056	45.72
.....	2 cents per pound, plus 10 per cent.	650,221	41,134	17,117	.065	.....
	Free [3]	2,006	77	.....	.038	.....
IENT, GREASE-PROOF, AND IMITATION PARCHMENT PAPERS, BY WHATEVER KNOWN, NOT SUPERCALENDERED AND RENDERED TRANSPARENT OR PARY SO. (Act of 1909.)						
ır:		*Pounds.*				*Per cent.*
.....	2 cents per pound, plus 10 per cent.	1,829,078	$90,284	$45,609	$0.049	50.52
	Free [6]	427	16	.....	.037	.....
.....	2 cents per pound, plus 10 per cent.	3,877,311	186,844	96,230	.049	51.50
	Free [6]	988	37	.....	.038	.....
.....	2 cents per pound, plus 10 per cent.	1,424,227	81,541	36,638	.057	44.93
.....	.....do.....	1,819,755	96,342	46,029	.053	47.78
.....	.....do.....	539,321	27,321	13,518	.051	49.48
	Free [3]	981,713	26,396	.....	.027	.....

[1] Oct. 4, 1913, to June 30, 1914.
[2] Sec. IV–M, act of Oct. 3, 1913.
[3] Sec. 2, act of July 26, 1911.
[4] Reciprocity treaty with Cuba.
[5] Aug. 6, 1909, to June 30, 1910.
[6] Sec. 23, act of Aug. 5, 1909.
[7] July 1, 1913, to Oct. 3, 1913.

ates of duty on parchment paper and imitation parchment paper, 1894–1913.

Par.	Tariff classification or description.	Rate of duty.
308	Parchment papers	30 per cent ad valorem.
398	* * * parchment papers	2 cents per pound and 10 per cent ad valorem.
411	* * * parchment papers, and grease-proof and imitation parchment papers which have been supercalendered and rendered transparent, or partially so, by whatever name known.	Do.
	All other grease-proof and imitation parchment papers, not specially provided for in this section, by whatever name known.	Do.
324	* * * parchment paper	25 per cent ad valorem.
	* * * grease-proof and imitation parchment papers which have been supercalendered and rendered transparent or partially so, by whatever name known, all other grease-proof and imitation parchment papers, not specially provided for in this section, by whatever name known, * * *	35 per cent ad valorem.

COURT AND TREASURY DECISIONS.

Parchment paper is made from vegetable fiber, not from wood pulp, is unsized, and is treated with diluted sulphuric acid. It is dull in finish, dense, hard, and hornlike. It is grease proof, waterproof, translucent, and much more tenacious than the original material. Paper invoiced as "white glacé wrapping paper" was held within the provision for "imitation parchment papers which have been supercalendered and rendered transparent or partially so, by whatever name known," and not as wrapping paper under paragraph 415 of the act of 1909. (Germania Importing Co. *v.* United States, 4 Ct. Cust. Appls., 29, of 1913.)

Parchment paper having a cotton cloth back such as is used in the manufacture of worsted yarns, covering the rolls between which the yarn is made to pass in the process of spinning, and known as parchment cloth, was held to be dutiable as a manufacture in chief value of parchment paper rather than as paper. (Stursberg *v.* United States, 3 Ct. Cust. Appls., 370, of 1912.)

Vegetable parchment is synonymous with parchment paper and dutiable accordingly under paragraph 324 rather than free of duty as parchment or vellum under paragraph 568. (G. A. 7736, T. D. 35526, of 1915.)

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UNITED STATES TARIFF COMMISSION
WASHINGTON

RIFF INFORMATION SURVEYS

ON THE ARTICLES IN

RAGRAPH 322 OF THE TARIFF ACT OF 1913

AND RELATED ARTICLES IN OTHER PARAGRAPHS

PRINTING PAPER

Paragraph 322:
Book Paper

Paragraph 567:
Newsprint Paper

REVISED EDITION

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1923

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PREFACE.

ıis is one of a series of Tariff Information Surveys prepared by United States Tariff Commission and transmitted to the Com-ɜe on Ways and Means. The series covers all of the articles and nodities provided for in the tariff act of October 3, 1913, and ːs not specifically provided for. It is arranged in the numerical ː of paragraphs of that act.

some cases two or more paragraphs have been combined in one phlet. In doing this industrial relationship of the articles has followed when possible. In those instances where a paragraph ɔeen treated under a preceding paragraph of the tariff act refer- is made to the fact at the point where the paragraph appears in erical order. Where one grade of an article is dutiable and her grade of the same article is on the free list, the article is ıssed under the dutiable paragraph, which appears first in erical order in the tariff act. In certain instances articles of ı industrial relationship and which occur in separate paragraphs ıe tariff act have been combined under one paragraph for con-ence of discussion. Reference is made to this fact at the point ːe the commodities would naturally occur in numerical order.

ıe first pamphlet in the series is an "Introduction and index," ːh contains:

An introductory chapter discussing the scope of the series and ɜeneral method of treatment.

An alphabetical index of the articles provided for in the tariff ɔf 1913, showing the paragraph of the act in which the article is ided for, and, if discussed under a different paragraph, the ber of such paragraph.

A list of the pamphlets in the series, showing the paragraphs articles included in each pamphlet.

ıus, by the use of this "Introduction and index" the exact loca- of the discussion relating to a given article or commodity can be rtained.

ı the preparation of this report the Tariff Commission had the ices of Constant Southworth, of its staff, and of others.

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PRINTING PAPER.

ARAGRAPHS IN TARIFF ACT OF 1913 AND AMENDMENTS.

2.—Printing paper (other than paper commercially known as handmade ndmade paper, japan paper, and imitation japan paper by whatever unsized, sized, or glued, suitable for the printing of books and newst for covers or bindings, not specially provided for in this section, valcents per pound, 12 per cent ad valorem: *Provided, however*, That if ependency, province, or other subdivision of government shall impose uty, export license fee, or other charge of any kind whatsoever ıe form of additional charge or license fee or otherwise) upon printing lp, or wood for use in the manufacture of wood pulp, there shall be imnting paper, valued above 2½ cents per pound, when imported either lirectly from such country, dependency, province, or other subdiıment, an additional duty equal to the amount of the highest export export charge imposed by such country, dependency, province, or on of government, upon either printing paper, or upon an amount r wood for use in the manufacture of wood pulp necessary to manufacing paper.

7.—Printing paper (other than paper commercially known as handne handmade paper, japan paper, and imitation japan paper by whatvn), unsized, sized, or glued, suitable for the printing of books and newst for covers or bindings, not specially provided for in this section, ıbove 2½ cents per pound * * *. [Free.]

—On September 8, 1916, the maximum nondutiable value was raised on April 23, 1920, to 8 cents. On April 23, 1922, it returned to 5 cents.

SUMMARY.

two kinds of printing paper—newsprint and book paper. s a cheap grade containing on the average from 75 to ground wood; the remainder is sulphite pulp. It is used newspapers and for various minor purposes. Book perior grade, made principally of sulphite and soda pulp, en containing rag pulp. It is used mainly for printing magazines. There are various intermediate grades rsprint and book paper; the line of division between the s is, hence, not distinct. The act of 1916 distinguishes m on the basis of value. It divides printing paper into -that valued at not above 5 cents per pound and that valcents per pound.[1] The former, newsprint, enters free; ook paper, at a 12 per cent ad valorem duty.

paper, including both newsprint and book paper, is the United States in larger quantities than any other er. In 1921 the output was 1,226,189 short tons of ıd 725,992 short tons of book paper.

paper industry, being confronted with negligible foreign has no tariff problem. In the calendar year 1921, ook paper amounted to less than one-tenth of 1 per cent production. In the fiscal year 1914, when imports were ıest, they amounted to only one-third of 1 per cent of oduction. On the other hand, a substantial export

[1] cents until it was raised on Sept. 8, 1916, to 5 cents and again on Apr. 23, 1920, to 8, 1922, it returned to 5 cents.

paper was built up during the war. In the calendar
s were 8.38 per cent of domestic production in com-
3 per cent in the fical year 1914. In the calendar
1921 the corresponding percentages were 4.33 and
7.

f the domestic supply of newsprint paper, however,
nnected with the Canadian newsprint industry. In
newsprint equaled 64.63 per cent of domestic pro-
imports came almost exclusively from Canada,
decade has been rapidly building up an important
ry, while the American newsprint industry has been
tandstill.

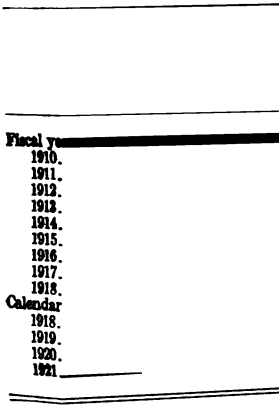
newsprint industry really constitutes a northward
the American industry. It has been a natural
e superior pulpwood resources of Canada. Some-
the Canadian newsprint industry is owned by Ameri-

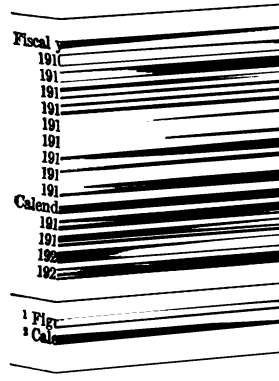
industry is geographically adjacent to the American,
in the same general pulpwood belt. Its principal
ame as those of the American industry—namely, the
e United States. Consequently the large Canadian
the United States is similar to an internal trade.
average it costs less to produce newsprint in Can-
United States. In 1916 the differential was 15
is generally estimated at about 10 per cent. The
crease in the differential lies probably in the tendency
toward equalization of wage scales in the United
la.

reason for Canada's lower cost of production is the
ich Canadian mills on the average can secure their
ther reason, which became of importance as
y grew at the expense of the United States, is the
superior efficiency of Canadian paper-mill equip-

ve artificial lines of cleavage arising from national
ds the fact that the North American newsprint
strong position, and barring unduly fast increase of
nada, is likely to continue to command a firm and
The reasons for this are that the pulpwood forests
ishing and that the demand for newsprint promises
In 1919 and 1920 the whole world experienced a
sprint. In the winter of 1920–21, when business
ing many lines of paper, was severely depressed,
larger part of newsprint paper were little affected
n to lower prices in the spring of 1921 was accom-
he shutdowns and other maladjustments so keenly
t large. Thus the factors both of demand and of
insure the future of the newsprint market for some

shortage of pulpwood in the United States and the
goes on exports of Crown land timber are causing
f the Canadian newsprint industry at the expense
. Large new mills are being installed in Canada,
ican capital. Some American newsprint mills are
tion.





Summary tables.

NEWSPRINT PAPER.

	Domestic production.[1]	Imports for consumption.	Domestic exports.	Ratio to production.	
				Imports.	Exports
	Short tons.	*Short tons.*	*Short tons.*	*Per cent.*	*Per cent.*
.....	.....	44,853	.....	.....	.....
.....	.....	54,012	49,755	.....	.....
.....	.....	56,403	51,787	.....	.....
.....	[2] 1,304,595	147,561	50,218	11.31	3.85
.....	[2] 1,282,934	276,033	44,483	21.67	3.47
.....	[2] 1,239,122	324,617	62,941	26.19	5.07
.....	[2] 1,355,196	438,745	63,622	32.38	4.71
.....	[2] 1,359,012	491,627	72,473	36.18	5.33
.....	.....	602,114	110,181	47.28	8.74
.....	1,260,285	596,517	96,739	47.33	7.65
.....	1,374,517	627,891	110,268	45.68	8.02
.....	1,511,968	729,844	45,889	48.27	3.04
.....	1,226,189	792,461	16,812	64.63	1.37

	Imports for consumption, value.	Amount of duty.	Value per unit of quantity.	Equivalent ad valorem rate.	
				On all imports.	On dutiable imports only.
				Per cent.	*Per cent.*
.....	$1,663,587	$224,282	$0.019	13.48	13.48
.....	2,099,888	259,527	.019	12.91	12.91
.....	2,158,937	131,692	.019	6.10	14.61
.....	5,680,693	172,870	.019	3.04	14.81
.....	10,767,054	50,204	.019	.47	14.60
.....	12,883,452	.....	.029	.....	.....
.....	16,670,604	.....	.019	.....	.....
.....	23,614,834	.....	.024	.....	.....
.....	34,193,534	.....	.028	.....	.....
.....	35,023,092	.....	.029	.....	.....
.....	43,685,109	.....	.035	.....	.....
.....	66,598,505	.....	.047	.....	.....
.....	79,123,368	.....	.050	.....	.....

m Federal Trade Commission.

BOOK PAPER.

Domestic production.[1]	Imports for consumption.	Domestic exports.	Ratio to production.		Imports for consumption, value.	Amount of duty.	Value per unit of quantity.	Equivalent ad valorem rate.
			Imports.	Exports.				
Short tons.	*Short tons.*	*Short tons.*	*Per ct.*	*Per ct.*				*Per cent.*
.....	1,968	.....	.....	.....	$257,798	$40,010	$0.065	15.52
.....	3,197	13,654	.....	.....	498,305	76,879	.078	15.43
.....	2,372	12,107	.....	.....	331,992	52,448	.058	15.80
.....	3,127	14,317	.....	.....	342,081	53,660	.055	15.69
[2] 934,979	3,370	14,301	0.36	1.53	309,426	36,359	.046	[3] 11.75
.....	2,306	15,632	.....	.....	237,261	28,471	.051	12.00
.....	731	36,737	.....	.....	125,755	15,091	.086	12.00
[2] 892,288	505	64,601	.06	7.24	115,881	13,933	.115	12.02
.....	152	45,036	.02	5.30	42,500	5,100	.140	12.00
849,157	115	49,610	.01	5.84	44,445	5,333	.191	12.00
914,823	82	76,691	.01	8.38	58,319	6,998	.354	12.00
1,104,464	2,078	47,558	.19	4.33	493,411	59,209	.118	12.00
725,992	682	20,092	.09	2.77	196,726	23,607	.144	12.00

are from Bureau of Census; figures for 1917–1921 from Federal Trade Commission.

ıt of book paper was imported free in 1914; the equivalent ad valorem rate on dutiable 2.61 in 1914.

General Information.

DESCRIPTION.

Printing paper is a thin sheet consisting primarily of matted and ressed cellulose fibers obtained from wood, cotton, and other vege- ible growths. There are two kinds, newsprint and book paper.

Newsprint.—Newsprint paper, as the name implies, is used mainly r printing newspapers. Minor uses are for cheap magazines, books, talogues, telephone directories, railway guides, school tablets, hand- lls, etc. Some so-called newsprint is used as a cheap grade of wrap- ng paper. Newsprint is cheaper, tears more easily, and is less dura- le than book paper. Standard newsprint, which comprises about 90 er cent of all newsprint, contains usually from 75 to 80 per cent of round wood pulp and from 20 to 25 per cent of sulphite pulp, which a chemically prepared pulp of a grade superior to and more expensive an ground wood pulp. Between standard newsprint and book aper there are various grades of newsprint containing a greater ercentage of sulphite pulp, such as halftone news, special news, ovel news, catalogue news, etc.

Book paper.—Book paper is primarily paper for printing books and her publications. Ordinary book paper is usually made entirely of emical wood pulp. Sulphite is the principal grade used. Rag pulp also much used for the better grades. A great many periodicals and agazines, including women's publications, religious, trade, and rm papers, are published on book paper, as are also books and music. ost catalogues issued by manufacturers and many of those issued by ail-order houses and others are printed either wholly or in part on ook paper. In addition there are a large number of incidental uses paper suitable for printing books. School pads, cheap writing apers, and envelopes are often made of this grade of paper. Large uantities are used for wrapping soap because this kind of paper, roperly prepared, is not affected by the alkali in the soap. It is used r wrapping purposes by druggists, chemical, and patent medicine anufacturers; and also when coated and colored, for lining and cov- ing fancy paper boxes. When used for these purposes, however, it usually known by some other name, such as letter paper, wrapping aper, or coated paper.

The principal grades of book paper are machine finish, sized and upercalendered, coated, and cover. The difference in the first three rades lies mainly in the finish given the paper.

Machine-finish book paper goes through practically the same rocess of manufacture as newsprint. It receives its only finish om passing through calender rolls as it comes off the paper machine. ome variation in finish, however, is possible. Some of the different nishes classed as machine finish are laid, wove, English finish, gh bulk, eggshell, etc. "Laid" denotes certain markings on the eet, consisting of prominent vertical watermark lines wide apart nd smaller horizontal lines close together. "Wove" is ordinary achine finish with fine equidistant markings. "English finish" enotes a dull surface, and in the United States covers a number of nishes, all of high quality. "High bulk" signifies a thick blotter- ke paper, greatly compressed. "Eggshell" is a rough finish in

f an eggshell surface. These different finishes are made
different designs while the paper is still moist. Machine-
is used largely by publishers of books, catalogues, etc.
d supercalendered paper is machine-finish paper which
rough an additional process of sizing and calendering to
rd, smooth finish. A large part of this kind of paper is
olishers of illustrated magazines.
aper is machine-finish paper coated with a paste made of
, starch, and other materials, and then calendered to
igh finish. It is usually coated on both sides, but some-
e side only. It is used for high-grade illustration and
work.[2]
per is a strong, heavy grade which is usually coated. It
ly for the covers of magazines, catalogues, etc. Coated
over paper are separately provided for in the act of 1913.

DOMESTIC PRODUCTION.

RANK OF INDUSTRY.

to the census reports in 1914, the paper and wood-pulp
nked twentieth among the industries of the United States
ue of products. In 1920 out of a total paper production
tons, 2,616,432 tons, or 36 per cent, consisted of printing
print amounting to 21 per cent and book paper to 15
total paper production. In December, 1920, 86 mills
g newsprint and 95 mills book paper. In 1921, a year
depression, total paper production amounted to 5,356,317
ch 23 per cent was newsprint and 14 per cent book paper.
er, 1921, the number of mills making newsprint and
were 86 and 84, respectively.
paper boards the output of newsprint paper was the
ly class of paper. Printing paper as a whole, including
int and book paper, exceeded even paper boards in out-
llowing table shows the production in tons of the different
er in 1920 and 1921.

Grade.	1920	1921
	Short tons.	*Short tons.*
	2,313,449	1,664,931
	1,511,968	1,226,189
	1,104,464	725,992
	831,889	651,605
	389,322	242,485
	366,941	286,111
	211,923	130,863
	177,447	148,142
	113,824	69,725
	313,387	210,274
	7,334,614	5,356,317

mation Survey, Surface-coated Paper.

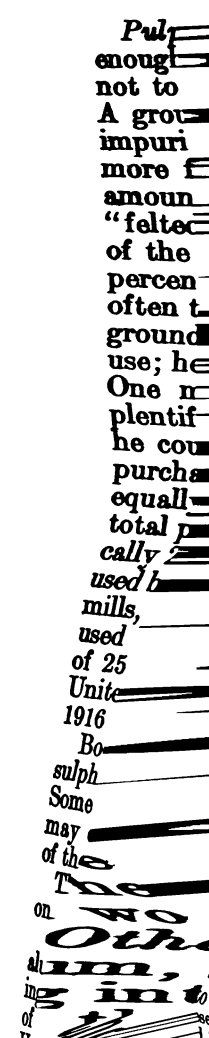
MATERIALS.

wood, esparto, etc.—Pulpwood is the main raw material going pulp for paper. Since 1916 domestic consumption has ted to more than 5,000,000 cords per year for all kinds of Spruce, hemlock, balsam fir, and poplar are the important oods. In 1920 the consumption was divided as follows: Spruce, cent; hemlock 14½ per cent; balsam fir, 5¾ per cent; and poplar ent. About one-fifth of the pulpwood consumed in the United in 1920 was imported from Canada, the remainder being ed at home. Canada is the only foreign source of pulpwood upon. The domestic supply at present is not adequate. It nated that at the present rate of cutting the supply of spruce, k, and balsam fir in the eastern part of the United States, 95 per cent of the pulp and paper mills are located, can not re than 25 years, and that the spruce, hemlock, and fir of the country, including Alaska, will be exhausted in about 70 years. ce is the pulpwood most used, because of its comparative n from resin and other impurities and because of the whiteness pulp it yields. The ground-wood and sulphite pulp produced pruce can be used unbleached in making newsprint paper. ck and balsam fir rank next to spruce in desirability for use ing ground wood and sulphite. They have to a smaller degree ne qualities as spruce. Practically all newsprint is made from lp of these three woods, as well as a large part of the book produced. Certain hardwoods, however, notably poplar condarily beech, birch, maple, and chestnut, are much used in ing soda pulp, out of which a fluffy thick book paper is made, milar to that made of esparto pulp in England.

on rags, and to a smaller extent linen rags, are also used in pulp for a high quality of book paper, but never for newsprint Cotton linters have recently come to be utilized in making kinds of book paper. Esparto grass, imported mainly from and Northern Africa, is much used in Great Britain for making fluffy, high-quality book paper. The use of esparto in the States is negligible. Newsprint is ordinarily, however, made vely of wood pulp with sometimes the addition of a little paper.

ddition to these fibrous growths commercially used for the of printing paper, there are a large number of vegetable nces from which satisfactory newsprint or book paper can be Their use in paper manufacture, however, is not economical, e they ordinarily represent seasonal crops of a bulky nature, ng thus large storage facilities to enable the pulp mill to throughout the year. Furthermore they contain either a rcentage of pith, or, as in the case of straw, a high percentage ous material, which consumes an excessive amount of cooking al and gives low yields of pulp. Such fibers are cornstalks, ane bagasse, the various straws, bamboo, seaweed, banana etc. From bamboo and flax straw an excellent grade of aper is obtainable. Perhaps in future years it will be possible ze these fibers on a commercial scale.

question of our waning supplies of pulpwood and of remedies shortage, as well as the 1920 shortage in high-grade rags, e possible use of other fibers in paper making are discussed survey on wood pulp and rag pulp.



ewsprint paper contains ground wood pulp plus just
hite pulp to make the finished sheet sufficiently strong
k over the paper machine or over the printing presses.
ood fiber is short and stiff, containing resin and other
A sulphite fiber is pure cellulose and much longer and
le than the ground-wood fiber. Introducing a certain
sulphite into the ground wood enables the fibers to be
gether, or interlocked, much more securely. Because
ly varying quality of ground wood produced, a varying
of sulphite is used in newsprint manufacture. It is
nat ground wood bought on the market is not so carefully
so closely screened as pulp made by a concern for its own
nore sulphite is required when ground wood is purchased.
acturer some years ago found that when water was
d he could grind his own pulp and screen it thoroughly
ake a good paper with 13 per cent sulphite, while with
round wood he had to use 30 per cent sulphite to get an
d paper. In 1910 the average proportion of sulphite to
sed in the United States in making newsprint was practi-
cent. In the first half of 1916 the percentage of sulphite
nills ranged from 12.8 per cent to 34.5 per cent for different
an average of 22.4 per cent. The percentage of sulphite
anadian mills ranged from 23.3 to 28.3 with an average
average percentage of sulphite to total pulp used for
es and Canadian companies combined in the first half of
3.3.

per in the main is made of chemical wood pulp, both
l soda. In Great Britain esparto pulp also is important.
use considerable quantities of waste paper. Book paper
n varying percentages of rag pulp, or even, in the case
grades, be made entirely of rag pulp.
tion of supply of wood pulp is discussed in the survey
lp.

erials.—Filler (in the form of china clay, talc, or agalite),
; (usually rosin), and color are the other materials enter-
actual composition of the paper. In 1910 the proportion
condary materials used by 38 newsprint mills in the
es amounted to only 5.5 per cent of all materials used;
ler consisted of wood pulp. Filler is very little used for
aper. A much greater proportion of subsidiary materials
greater variety in the proportions of all materials used,
book-paper manufacture. In 1916 three eastern book-
anies used 40.1 per cent soda pulp; 34.9 per cent sulphite;
t waste paper; 19.4 per cent clay, agalite, and talc; 1.7
m; and 1 per cent rosin. In the same year five Michigan
used 58.9 per cent waste paper, including a small pro-
ags; 5.7 per cent soda pulp; 21.7 per cent sulphite; 8.2
ay, agalite, and talc: 4 per cent alum; and 1.5 per cent
he case of the eastern companies one-fifth by weight of
nanufactured consisted of filler, while in the case of the
mpanies this proportion was less than one-tenth.
ases no difficulty or tariff problem is involved in securing
rials. Certain manufacturers prefer English china clay

nestic clay; according to their judgment it is so far superior to omestic clay as to be practically a different product. During ar there were periodic shortages of this commodity, but it is now obtainable from England. The domestic color industry has developed to a point where it is practically independent of the an, although before the war almost all colors came from any. The yellowish color of newspapers after the beginning e war was due to the lack of German red and blue dyes which ve the characteristic natural wood color of the unbleached pulp, g it appear white.

EQUIPMENT.

st of the equipment used in the United States by manufacturers nting paper is made in this country. Very little pulp and paper nery is imported, but considerable quantities are exported to la and Japan and to a less extent elsewhere. In 1920 exports p and paper machinery were valued at $2,987,657.

United States has reached practically a standstill in installing ewsprint machinery. The development of the Canadian news- industry has meant the purchase by Canadians of large up-to- nachinery from the United States and also, in a measure, from nd. Canada has recently begun manufacturing her own paper nes. In the main the Canadian equipment is newer and more nt.

table below compares the newsprint machines in Canada with in the United States, as they were in 1920. The machines are d into five classes according to their width. Machines up to ches wide may be called small; 101 to 140 inches, medium- 141 to 170 inches, medium-large; 171 to 200 inches, large; and 200, extra-large. The larger machines of both countries are yed almost exclusively on newsprint, while the smaller ones in a many cases are often employed part of the time on other kinds per, such as book, sulphite bond, or wrapping paper. The wide nes operate usually at a very rapid speed. They are hence un- to the making of other types of paper of whose texture more is ded than that it shall have the minimum strength necessary to nt the paper from breaking in the paper machine or in the ng presses. This minimum strength is all that newsprint es. The table was compiled from Lockwood's Directory of the and Allied Trades. In cases where only the width of the trimmed sheet made on the machine was available, a trimming nce was made and added to the trimmed width so as to reduce dths in the table to machine widths.

Inches of width.	United States.		Canada.	
	Number.	Per cent of total.	Number.	Per cent of total.
.....	44	32.8	12	19.4
.....	53	39.6	13	21.0
.....	35	26.1	25	40.4
.....	2	1.5	6	9.6
.....	.....	.....	6	9.6
al.....	134	100.0	62	100.0

n to the machines of the widths shown in the table there
achines in the United States varying from 73 inches to
n width whose width was not separately stated. One
oncern did not report the number or width of the ma-
e of its mills.

data comprised in the above table were compiled a num-
new machines have been installed in Canada and the
tes. The table, neverthless, affords a fairly accurate
of the sizes of Canadian and American paper machines.
seen that Canada's machines, though naturally fewer in
n those of the United States, are on the average much
the United States 72.4 per cent of the newsprint machines
small and medium-small classes (up to 140 inches in
pared with 40.4 per cent in the same classes in Canada.
eeminence in the three larger classes is apparent. Of the
Canada, 9.6 per cent were of the extra-large variety (over

METHODS OF PRODUCTION.

and paper industry is thoroughly standardized. Prac-
anufacturers in the United States and Canada use nearly
pe and style of equipment, which is almost entirely auto-
ring only a few tenders and their assistants to operate it.
y 10.16 per cent of the wage earners were women, and
1 per cent were under 16 years of age.

er.—Paper manufacture begins with the beater. The
of the wood and rags into pulp is dealt with in the
ood pulp and rag pulp.

er is a large oblong tub with rounded ends, divided into
partition which stops short of the ends and thus leaves a
channel. On one side of this partition, located about two-
e way from one end of the beater, is a large roll extend-
ise across the channel. This is shod with iron bars or
blong cross section running parallel to its axis and pro-
ut an inch from the surface all around the roll. A so-
late similarly imbedded with bars extends across and is
the bottom of the tub just under the axis of the roll. The
lled with pulp and water. Sometimes waste paper is
e roll is made to revolve, causing the pulp to circulate
und the beater and between the bars or blades of the
bars or blades of the bedplate. The fibers are drawn out,
roughly separated, and to a certain extent cut up. The
ne fiber may be regulated somewhat by adjusting the
en the bars of the roll and those of the bedplate, and also
the sharpness of the blades. This process, called beating,
ere from an hour to several hours, according to the kind
be made and according to the judgment of the man in
ne proper manipulation of the stock in the beater is one
ntials of manufacturing good paper and requires great
perience.

pulp has circulated for a time and is nearing the desired
, the other materials are added. Clay, agalite (ground
per), or talc is used as a filler to give the paper body and
and to secure a smooth, polished surface. Filler is

ery little used in making newsprint, however. Liquid rosin used for sizing to eliminate the absorptiveness of the paper and to nable it to receive printing ink satisfactorily. Red and blue aniline yes are added to dispel the natural yellowish wood color of the pulp, aking the paper appear white. Alum has the function of precipiating the rosin and the coloring matter on the fibers.

In an integrated paper mill—that is, one which has attached to it ground-wood mill and a sulphite plant—the pulp is "slushed" r mixed with water and pumped through large pipes to mixing vats r chests, from which it is pumped to the beaters when needed. In ills which buy either or both kinds of pulp, receiving it in "laps" folded blankets of pulp), a "shredder" is used. This is a device for nredding the sheets of pulp into fine flakes before it is introduced nto the beater.

In modern newsprint mills beaters are dispensed with as mixing gents. The slushed pulp, ground wood, and sulphite are pumped in ne desired proportions into huge cylindrical mixing tanks. A mixing ank is ordinarily 14 feet deep and 14 feet in diameter. It holds 2½ ons of pulp at a time. Paddles revolve in it with great force, mixing ne stock much in the fashion of an egg beater. Containers with alum, zing, bleaching materials, and other ingredients are connected with ach tub. The necessary quantities are measured automatically.

Refining.—From the beater or the mixing tank the stock is conveyed to reservoirs or "stuff chests," from which it is pumped up to be assed through a Jordan engine. The Jordan engine gives the last efining touch to the pulp and shortens the beating process. It onsists of a hollow cone in which revolves a smaller cone. The pulp irculates between the cones from the smaller to the larger end, ropelled by centrifugal force. The contiguous surfaces of each cone re equipped with long, narrow steel bars or blades, each resembling omewhat the runner of a skate, although only about one-fourth inch quare in cross section. Between these sets of blades each little undle of fibers not already broken up by the beating process is eparated and the whole stock made homogeneous. From the large nd of the Jordan the pulp passes to a second stuff chest, much milar to the one that receives the stuff from the beaters, and is ept in suspension in water by whirling propellers or "agitators" ntil the paper machine is ready to use it.

The Fourdrinier machine.—The prepared pulp is now conveyed, uch diluted with water, to the paper machine, where it is run as a neet onto a moving screen belt, consisting of fine woven copper ires. Part of the water drains off through the screen and part is emoved by suction boxes over which the wire moves. An endless ubber strap called a deckle, at each side of the wire screen, preents the water and pulp from running off the side of the machine. he distance between the two deckle straps, and thus the width of ne sheet of paper, is adjustable. At the end of the screen the sheet asses between two rolls, which remove more water, runs onto a noving woolen belt, passes through a series of press rolls, which also queeze out water, is dried by being run over a long series of large nternally heated hollow cast-iron cylinders, is passed between calnder rolls to polish the surface, and is then wound up on a roll.

Finishing processes.—The process just described ordinarily completes the manufacture of newsprint paper and machine-finished book

upercalendered and coated grades of book paper receive
eatment. If a particularly high finish is desired, the
through the supercalendering machines. These consist
alternating pressed paper or cotton rolls and hollow iron
one over the other. The sheet is moistened with water
zing solution containing gelatine and alum before it is
ugh the calendering machine. The paper thus produced
ed and supercalendered.
aper, used for printing illustrations and thus requiring an
mooth surface, is paper coated with a solution usually
f clay mixed with casein to cause it to adhere to the paper.
; is applied by passing the paper over one roller revolving
vered in a trough of coating liquid, or between two rollers,
s it is desired to coat one or two sides. Brushes distribute
material evenly. The paper is then dried and run through
machines to produce the desired finish.

ORGANIZATION.

ient conduct of the pulp and paper industry requires
extensive capitalization, and highly developed organiza-
1916 the American newsprint-paper industry operated
s and the book-paper industry only 70 mills. In January,
ills were making newsprint and 93 mills book paper.
paper establishments require an investment of approxi-
,000 per thousand board feet of daily consumption, in
with $1,500 per thousand feet of daily product required
nanufacture.
out 45 United States companies making newsprint paper
companies, with an annual output of more than 25,000
er each, produced more than 82 per cent and 4 companies
t 55 per cent of total domestic production. These four
in order of size were the International Paper Co., with
per mills,[3] 9 of them making newsprint exclusively, the
hern Paper Co., the Crown Willamette Paper Co., and the
& Ontario Power Co. In the book-paper industry, out of
0 companies in the United States, 15 companies, each with
acity of 50 tons or over, were rated to produce 75 per cent
output in 1916. Three companies had a rated combined
f one-third the total domestic output. These were the
nia Pulp & Paper Co., with 15 mills, S. D. Warren & Co.,
er, Burbank & Co. Twenty-three book-paper manufac-
uding most of the large ones, belonged in 1917 to a statis-
ı, which has since ceased to exist. A considerable number
k-paper manufacturers now belong to the Book Paper
rers' Association. The greater number of the American
ian newsprint producers are affiliated in the Newsprint
reau.

GEOGRAPHICAL DISTRIBUTION.

er and pulp industry is concentrated chiefly in the North-
d Lake States, where it was originally established on

ional Paper Co. in 1921 operated 23 pulp and paper mills.

he proximity to pulpwood forests. In spite of the
ıstion of the forests and the constantly increasing hauls
, it has remained geographically almost stationary.
s has the lumber industry been able to keep near its
of raw material, largely because of the fact that the
lack of mobility of a pulp or paper plant commits it to
which it is first established.

wsprint-paper production was distributed as follows:
5 per cent; Maine, 32 per cent; Wisconsin, 9 per cent;
per cent; and all other States, 15 per cent. In 1914
roduction, not including a small amount of paper for
ıph, map, woodcut, etc., was divided as follows: Penn-
per cent; Massachusetts, 14 per cent; Maine, 12 per
n, 11 per cent; New York, 10 per cent; Wisconsin, 9
, 8 per cent; all other States, 21 per cent. The output
istributed in much the same way.

HISTORY OF THE INDUSTRY.

of making true paper was discovered by the Chinese.
ough, this earliest paper was made from what was vir-
ulp and by a method which though simple and crude
essentials the modern process. The papyrus of the
ough giving us the name, was not a true paper.
ufacture first began in the United States about 1690,
as established near Philadelphia. The modern paper
ever, was not used for more than a century. It was
99 by Louis Robert, of Essonnes, France. Up to 1860
er manufacturers made use principally of rags for the
nd vegetable fibers for the coarser grades.

half of the nineteenth century it became manifest that
rags, straw, and other vegetable fibers was inadequate
rowing demand for paper. The pressure for a larger
material brought forth almost simultaneously and
dependently two discoveries of the process of grinding
lp, one in Nova Scotia and one in Germany. Nova
1838 for her discovery and Germany 1840. However,
il 1866 that the first ground-wood machine was installed
States. In the meantime soda-pulp manufacture had
ced from England in 1854. Although the sulphite
ıvented by an American in 1866, the first sulphite pulp
ıited States was built in 1887.

ıtroduction of the ground-wood process paper making
a rapid rate. The estimated daily capacity of Ameri-
t mills reached 400 tons in 1880 and in 1916 had in-
out 4,700 tons. In the decade prior to 1900, however,
pansion of capacity led to overproduction and a con-
ne in prices. In 1898 the International Paper Co. was
t absorbed most of the mills east of the Mississippi
he control of from two-thirds to three-quarters of the
put. Although this combination appeared to have a
ect in strengthening prices, new independent mills were
erproduction continued. Expansion of the American
ustry practically ceased after 1910, the increase in the

mand being taken care of thenceforth by the growing
›wsprint industry. The development of the latter from
1909 to its present status of supplying approximately
American newsprint consumption, in addition to total
›nsumption, has been little short of phenomenal. The
this development are considered in the section on Con-
›reign and Domestic Competition.
0 very little addition has been made to the newsprint-
ipment of the United States. The low prices obtaining
for newsprint caused manufacturers in several mills to
ines to the production of other kinds of paper.
er output also has failed to increase since 1914, with the
f 1920 production, which, owing to abnormally large
owed a considerable increase. According to a compila-
n 1920, 13 new book-paper machines were to be installed
ed States in that year and 7 in 1921. These additions
234,900 tons to the annual capacity of book-paper mills,
per cent of 1920 book-paper production.
he war 45 manufacturers controlling 60 per cent of
utput were made subject to both civil and criminal pro-
the United States courts on the charge of controlling
obtaining a monoply price. The defendants entered
›lo contendere. They were enjoined from further action
of trade, were fined, and agreed for the period of the war
›onths thereafter to hold to a price schedule fixed by the
de Commission. The combination was formed in Decem-
nd was dissolved in November, 1917.

AMOUNT OF PRODUCTION.

›n of newsprint paper increased from 569,212 tons in 1899
1 tons in 1909, but for 10 years thereafter was practically
In 1920, owing to the unprecedented demand, produc-
›ed to 1,511,968 tons. According to the Bureau of the
1914 output averaged 2 cents per pound in value and the
t 3.7 cents per pound. Production of book paper increased
08 tons in 1899 to 694,905 tons in 1909 and to 934,979
1. After 1914, however, annual production fell off slightly
when, in response to unusual demand, it rose to 1,104,464
921 it decreased to 725,992 tons. The average value per
914 was 4 cents and in 1919, 7.2 cents. About five-sixths
›-paper output is plain book paper, which consists of the
›ish and the sized and supercalendered grades.
›wing table shows the various kinds of book paper, with
nts and values, produced in 1914 and 1919.

Kind or grade.	1914		1919	
	Tons.	Value.	Tons.	Value.
.....	786,626	$58,496,221	818,820	$118,270,776
.....	117,342	11,605,584	132,454	24,009,614
.....	21,679	2,809,377	22,163	5,643,191
›, map, woodcut, etc.....	9,332	588,332	9,821	1,556,372
.....	934,979	73,499,514	983,258	149,479,953

tion of book paper is sufficient to meet all home
to allow exports, equal in 1920 to 4.33 per cent
per cent of itself. Even before the war, in the
e imported less than one-third of 1 per cent of
n. The decreasing ability of domestic production
ever, to meet the home demand is striking. In
tates was practically self-sufficient in newsprint
e quantity imported equaled 11 per cent of pro-
t was 64.62 per cent of production, or about two-
ewsprint consumption.

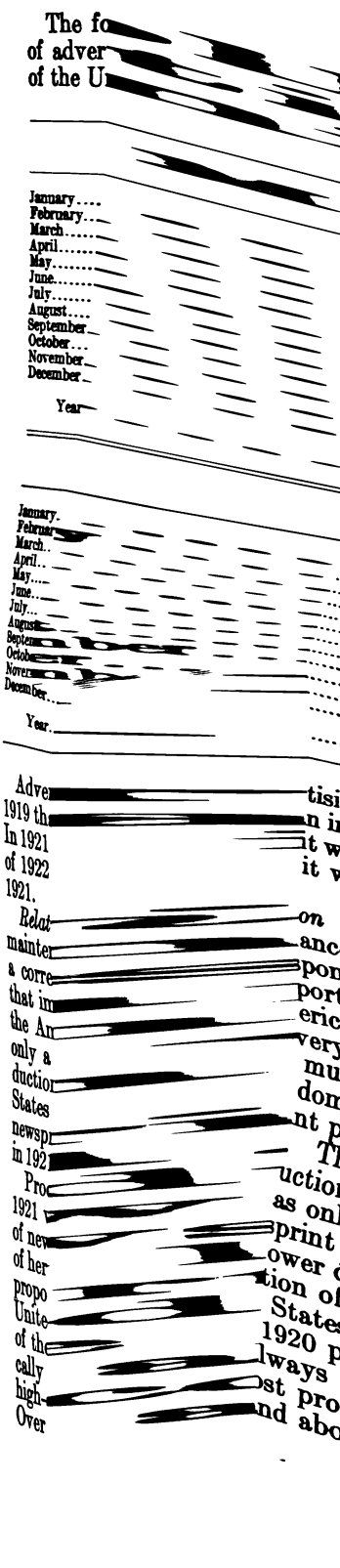
CONSUMPTION.

ble shows American consumption of newsprint and
years for which figures are available, from 1913

ewsprint paper.	Book paper.	Year.	Newsprint paper.	Book paper.
ort tons.	*Short tons.*		*Short tons.*	*Short tons.*
401, 894		1918	1, 760, 063	799, 662
516, 484	924, 048	1919	1, 892, 140	838, 214
520, 898		1920	2, 195, 861	1, 058, 789
730, 320		1921	2, 001, 885	706, 581
778, 166	828, 187			

decrease in consumption of newsprint paper in
ar experienced by American industry in fourteen
with consumption in 1920, a year of unusual
and prosperity, is in marked contrast to the
consumption of the products of almost all other
Thus, as shown in the above table, the con-
paper fell in 1921 to the lowest it had been for
nting in that year to about what it was in 1909.
n of newsprint continued at a faster rate than in
. In March and again in April, 1922, it reached

tising.—The increase in consumption of news-
of course, to the steadily expanding activity of
Behind the activity of the presses, however, lies
elopment of advertising on the part of all Ameri-
ne of the phenomena of modern industrial life in
s the concentration on selling. It is stated that
oduction has in many industries become subsidiary
incing the public that the product of one factory
better than that of another. However that may
the advertising energy in the United States at the
es an extraordinarily strong and steady demand
.



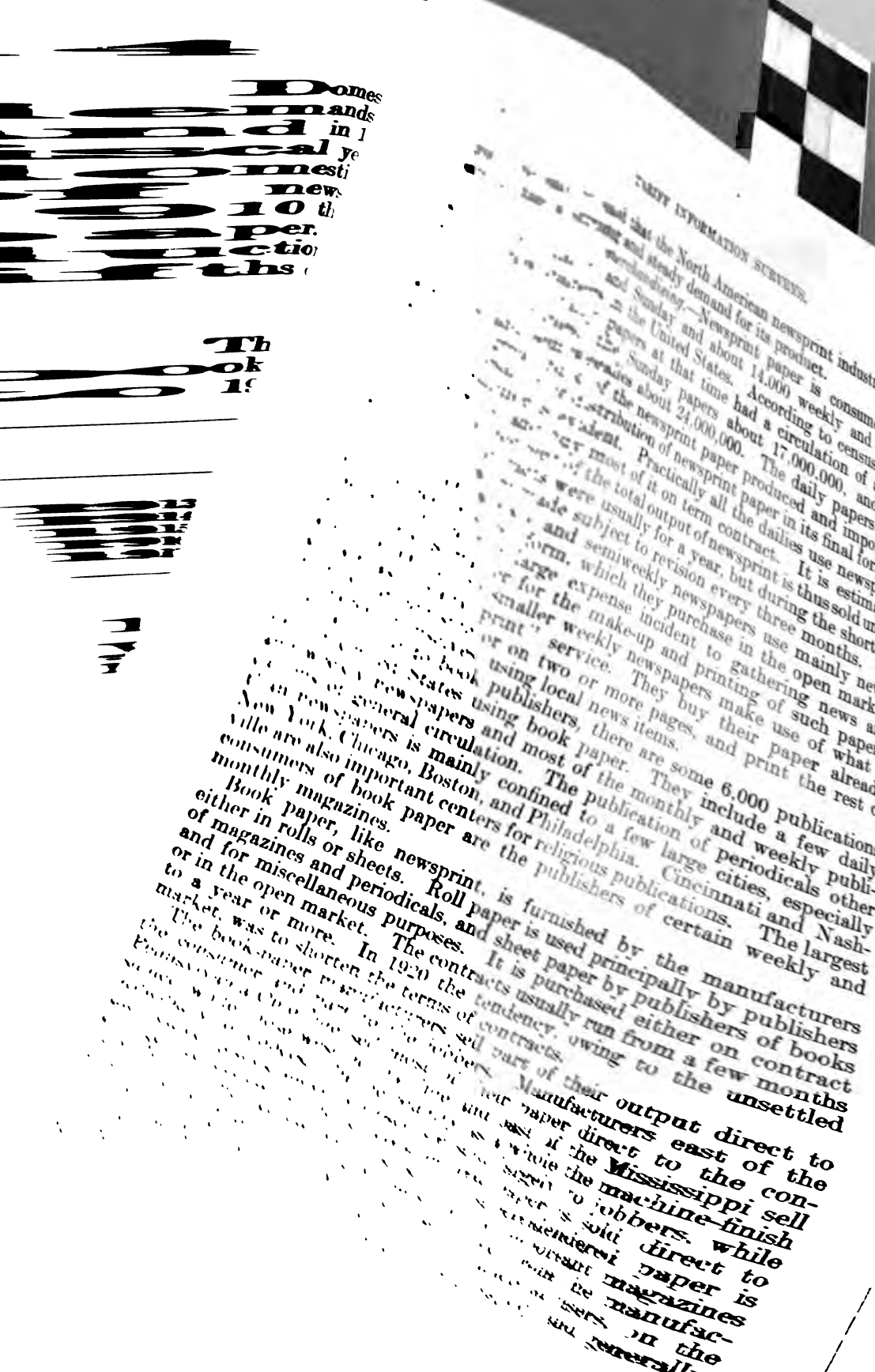
owing table shows by months the number of agate lines ing carried in the principal newspapers of 23 chief cities ed States from 1914 to 1922:

ıth.	1914	1915	1916	1917	1918
.....	54,819,530	52,966,687	59,007,845	61,852,037	59,168,540
.....	49,171,165	45,624,892	52,386,542	55,980,881	50,459,650
.....	60,528,175	56,849,103	63,181,714	68,681,180	67,374,935
.....	62,886,981	59,965,343	69,714,403	72,266,246	63,621,410
.....	66,142,550	61,352,581	68,892,781	69,866,721	67,742,070
.....	56,473,618	55,602,133	63,813,723	63,756,742	61,578,946
.....	48,283,931	46,931,551	54,664,445	55,014,781	52,450,884
.....	44,979,475	45,844,176	51,004,639	52,966,757	52,457,186
.....	51,121,450	57,000,901	64,211,311	62,665,710	63,522,269
.....	57,618,095	64,110,072	71,917,834	71,522,396	66,656,536
.....	56,634,778	60,697,444	67,768,852	67,866,904	68,772,696
.....	53,925,954	61,793,956	68,012,144	67,407,381	73,978,399
.....	662,585,592	668,738,839	754,576,233	769,867,736	747,783,521

fonth.	1919	1920	1921	1922
.....	67,882,992	93,823,338	86,761,000	87,983,000
.....	66,361,921	89,250,510	77,111,000	77,339,000
.....	81,066,180	105,415,323	93,720,000	95,957,339
.....	86,145,480	101,935,759	92,524,000	99,748,626
.....	89,373,685	107,199,392	99,106,000	99,833,665
.....	88,251,480	98,522,180	89,349,000	93,454,357
.....	76,710,974	85,170,942	75,619,000	82,345,723
.....	79,910,830	90,398,926	73,318,000	79,558,667
.....	87,497,355	93,506,884	86,206,000	.....
.....	103,545,096	110,236,500	100,134,000	.....
.....	104,414,925	101,264,769	96,313,000	.....
.....	97,343,791	98,296,808	96,852,000	.....
.....	1,028,504,709	1,175,021,331	1,067,013,000	.....

ng in the 23 cities in question was 38 per cent greater in ı 1918, and about 14 per cent greater in 1920 than in 1919. as 9 per cent less than in 1920. In the first eight months vas 4 per cent more than in the corresponding period of

of consumption to production in North America.—The e of consumption at a large figure has necessarily involved ding maintenance of production, except to the extent s from Europe, which began late in 1920, have supplied ın demand. Imports from Europe, however, represent small proportion of total consumption. Canadian pro- ıt be regarded, for all practical purposes, as part of United estic production. Combined American and Canadian roduction was 2,395,183 tons in 1920 and 2,038,095 tons ıus production in 1921 was 85 per cent of 1920 production. n of all kinds of paper combined in the United States in ly 73 per cent of 1920 production. The strong position paper, by comparison, is apparent. Canada, by reason cost of production, was able to maintain in 1921 a better of 1920 production than was the United States. In the es, the production of newsprint in 1921 was 81 per cent production; in Canada it was 92 per cent. It is practi- true that any decrease reacts more unfavorably on the oducers in an industry than on the low-cost producers. ove these questions of sectional distribution of supply it



THE PAPER SHORTAGE OF 1919-20.

he years 1919 and 1920 occurred a remarkable "paper famine." ıortage was most severely felt for newsprint, but it affected also)aper and other grades of paper. Prices rose to unprecedented the great metropolitan papers increased their prices per copy ıeir rates for advertising space; advertisers were urged to ıse and lessen the extent of their advertising display; some country newspapers were threatened with extinction. The)n was such as to lead to congressional inquiry. Hearings eld by a subcommittee of the Committee on Manufactures of ıited States Senate and numerous bills and resolutions were .ced in both houses of Congress.

newsprint shortage was not caused by a decrease of supply. ıave seen, production in 1919 and 1920 amounted to 1,374,517 11,968 tons, respectively, in comparison with 1,260,285 tons . American newsprint consumption in 1919 and 1920 was 10 and 2,195,861 tons, respectively, compared with 1,760,063 1918. And yet the contention that no shortage existed is ıs. A shortage, unless there is a complete absence of supply, ve, not absolute. The existence of a shortage in any com- simply means that those who have been in the habit of using nmodity find it more difficult than previoulsy to secure their supplies. This may be due to decrease in supply, increase nd, or both. In the present case we have seen that the ıctually increased; hence the shortage under consideration,)m the question of the inability of the industry to effect a ıd more rapid increase of output than it did, was due solely ıse in demand.

:rease in demand likewise may be due to either or both of ors. These are the increase in the requirements of those e been using the commodity and an increase in the number of that commodity. In the case at issue the former factor e operative, for the total number of daily newspapers in the tates decreased from 2,514 in 1917 to 2,374 in 1921, and the triweekly, and semiweekly papers from 16,824 in 1917 to 1921.

ıcrease in the newsprint requirements of the individual :r was due primarily to the strenuous advertising campaign :0. The main causes of this were the general revival of following the war and the effects which business men had luced by such advertising campaigns as were conducted e war by the Red Cross and the Liberty loans. The excess- x is said to have stimulated advertising, but the effect of s at least a debatable subject.

mand for advertising space in the newspapers became so npetitive that newspapers instead of soliciting were obliged heir patrons. Rates were raised, maxima of advertising week for any one advertiser were established, newsprint by the year were made subject by the paper manufacturers l every three months at revised rates, and other conditions sed on advertising and on purchase of newsprint.

tors that prevented a greater increase in domestic news- luction are considered below in connection with American)n with Canada and other countries.

Although it received less publicity than the newsprint shortage and was not so acute, there was also a shortage of book paper in 1919 20, due in part to increased advertising in periodicals and catalogues and in part to the great increase in book publishing which took place during and immediately following the war. The expansion in book publishing was occasioned apparently by three factors. The first of these was the large number of books written on the war. The second was the demand immediately after the war for schoolbooks. During the war schools postponed buying new books on the probability that after the war books would be cheaper. After the armistice publishers were drawn on for all available schoolbooks and published large editions—often up to 100,000 copies. The third factor was the effect of the war in stimulating a general interest in reading of an informative nature. People had more money to buy books and, because of shorter working hours, more time to read. The increase, however, was not so much in variety as in large editions.

DOMESTIC EXPORTS.

Newsprint.—In 1911 and 1912 domestic exports of newsprint were practically equal to imports, but have not increased so fast as imports since that time. In 1921 domestic exports amounted only to about one-fiftieth of imports. Newsprint exports a little more than doubled between 1911 and 1919, but decreased in 1920 and 1921 to less than those of 1911. In 1911 they amounted to 49,755 tons, in 1919 to 110,268 tons, in 1920 to 45,889 tons, and in 1921 to 16,812 tons. Only a very small proportion of the newsprint output of the United States has been exported. In 1913 exports amounted to 3.85 per cent and by 1919 had increased to 8.02 per cent, but declined to 3.04 and 1.37 per cent, respectively, in 1920 and 1921. Argentina and Cuba, in 1920 and 1921, were the largest importers of American newsprint. Other countries receiving substantial shipments in past years are Australia, France, the United Kingdom, Cuba, Mexico, Canada, Brazil, and Chile. Small shipments are made to most of the other countries of the world.

Book paper.—Domestic exports of book paper increased from 13,654 tons in the fiscal year 1911 to 76,691 tons in the calendar year 1919, but declined to 47,558 tons in the calendar year 1920 and 20,092 tons in 1921. They represent only a small proportion of production. In 1914 they amounted to 1.53 per cent of production and by 1919 had increased to 8.38 per cent. In 1920 they were 4.33 per cent of production and in 1921 only 2.77 per cent. Australia, Argentina, Japan, China, Brazil, Chile, Canada, Cuba, Mexico, and the United Kingdom are the principal recipients. As in the case of newsprint, small shipments of American book paper are sent to most parts of every continent.

FOREIGN PRODUCTION.[1]

The world.—An appended table (page 42) of the world's production of printing paper made of wood pulp in the year 1913, compiled by an Austrian authority, is of value as showing the pre-war proportions of production of the different countries. The total output was 3,643,000 tons. Of this amount the United States produced 1,394,000

[1] This section was prepared in collaboration with Paper Division of the Bureau of Foreign and Domestic Commerce.

actically half. Germany came next with 557,000 tons, or sixth; the United Kingdom was third with 312,000 tons, more than one-tenth. France, Austria-Hungary, Russia, d Sweden followed next in order. The other Scandinavian roduced very small amounts.

it was estimated that the world's newsprint producing id consumption per annum by principal producing coun- pproximately as follows:[4a]

Country.	Capacity.	Consumption.
	Short tons.	*Short tons.*
.....	530,000	300,000
.....	300,000	450,000
.....	150,000	210,000
.....	185,000	30,000
.....	150,000	10,000
.....	110,000	10,000
ountries.....	200,000	110,000
e.....	1,625,000	1,120,000
.....	1,500,000	2,000,000
.....	1,000,000	130,000
.....	150,000	(1)
.....	40,000	(1)
.....	4,315,000	(1)

Germany, and the Scandinavian countries are the only ntries with an export trade in newsprint of sufficient to compete in American and foreign markets with ewsprint. The United Kingdom and France are forced considerable portion of the newsprint they use. Russia imes is an importer of newsprint in spite of her vast in most other lines of industry, she is backward in nanufacture. Japan is not an important competitor 's markets.

By all odds the most striking development in the er field has been the increase during the last decade newsprint production. For reasons referred to here- e American newsprint industry in about 1909 failed to neet the growing domestic demand of the newspapers. r hand, the Canadian newsprint industry has emerged ty since 1909 to the position of a large-scale producer in tput in that year being equal to two-thirds of the Ameri-

It is almost certain that within a few years Canada argest producer of newsprint in the world. The follow- ows Canadian newsprint production from 1909 to 1921:

ar.	Short tons.	Year.	Short tons.
.....	150,000	1917.....	689,847
.....	350,447	1918.....	734,783
.....	414,982	1919.....	794,567
.....	488,621	1920.....	883,215
.....	607,976	1921.....	812,860

ternational Newsprint Conference at Stockholm, April, 1921, from Newsprint Service eports to the Bureau of Foreign and Domestic Commerce.
nditions of Foreign and Domestic Competition, p. 29ff.

In 1917 the value of the Canadian output was $38,869,084, in 1918 $46,230,814, and in 1919 $54,427,879.

The newsprint tariff issues between Canada and the United States may be more readily understood if one regards the American and Canadian newsprint-paper industries as essentially one and the same entity, having the same principal markets and the same interests, when not modified by protective-tariff duties or by export embargoes on the finished product or on essential raw materials. Geographically they form in the main one group of mills, being much more closely allied than different portions of some other industries lying entirely inside the United States. To a certain extent they use raw material from the same source. A large part of the Canadian and the American newsprint mills are members of one association. Something like half the capital invested in the Canadian newsprint-paper industry is of American origin. As a result of these conditions Canada's development may be considered almost in the light of a northward extension of the domestic industry, taking place largely for the purpose of supplying American newspapers with newsprint. Yet the fact that Canada is a separate political unit has played a considerable part in accelerating the northward movement of the industry through the Canadian provincial pulpwood embargoes, which make Canadian Crownland pulpwood unavailable to mills in the United States.[6] These embargoes and other factors influence the comparative production costs of the two countries.[7]

From 1917 until 1920 the Canadian Government forced newsprint manufacturers to retain 15 per cent of their production for home consumption. On April 6, 1920, however, the Supreme Court of Canada ruled that this restriction was illegal. After that date Canadian producers were unhampered in the disposal of their products.

The following table shows the 1917 and 1919 production of the different kinds of book paper in Canada:

Material used.	1917		1919	
	Quantity.	Value.	Quantity.	Value.
	Short tons.		*Short tons.*	
Rags, chief ingredient	(1)	(1)	769	$110,736
Wood fiber, chief ingredient	9,307	$1,399,727	31,594	5,110,460
Cover	7,141	1,301,795	671	106,165
Plate, map, lithograph, etc	10,890	2,112,933	.....	.....
Coated	5,544	1,305,849	8,024	1,758,573
Total	32,882	6,120,304	41,058	7,085,934

(1) Not separately shown.

Canada's production was equal to about 4 per cent of the American output in both years.

Germany.—Recent figures for newsprint production in Germany are not available. In 1921, however, it was reported that the German output of newsprint was increasing, while consumption was decreasing; as a result there was an exportable surplus. According to a German trade journal, the number of mills making newsprint in

[6] See Tariff Information Survey, Wood Pulp.
[7] See section on Relation of American and Canadian Newsprint Industries, p. 33ff.

eased 25 to 30 per cent from 1919 to 1920, while con-
reased 30 per cent; this is accounted for in part by the
ıe average size of newspapers. Mills formerly engaged
ıcture of wall, book, and other kinds of paper turned in
› producing newsprint. In 1921 and 1922 newspapers
ound it difficult, on account of the unstable financial
purchase their newsprint supplies. As the mark de-
e, prices of newsprint had been advanced considerably.
ıpers were forced to suspend. Something like disaster
wspaper publishing industry in the summer of 1922.
islative measures were taken in July (see p. 25).
ne time a lucrative export business in newsprint was
› through the abnormal exchange situation. Germany's
ılain print paper (mainly newsprint), which in 1913
69,000 metric tons, reached 45,000 metric tons in 1920
l to the rather extraordinary amount of 109,000 tons in
ıs ended April, 1922.
of 1920 Germany began to send newsprint to the United
ugust, 1922, exports were still coming in considerable

in 1921 Germany cut heavily into the market in Latin
other importing regions which the United States had
ing the war and which she maintained up to the period
business depression in the latter part of 1920.
›wing to the heavy demand for newsprint and the in-
culty of securing raw materials, German manufacturers
fficulty in filling their orders. From March to August,
e monthly imports of German newsprint into the United
nted to only three-fifths of their monthly average in 1921.
il, 1916, to April, 1921, the German newsprint industry
d to Government control, known as "Zwangswirtschaft,"
of which was to force the newsprint mills to make the
› use of their resources and to supply the German news-
newsprint expeditiously and to the full extent of their
e April, 1921, when the "Zwangswirtschaft" ceased, the
'sprint consumer has derived indirect assistance from the
foreign trade control office. This office grants export
is permitted by the Government to issue such licenses
he demands of the German newspapers have been filled.
ıtion of newsprint paper is controlled by two syndicates
'hich make recommendations to the foreign control office
er of export prices and quantities available for export.
.cates are the Verband Deutscher Druckpapier-Fabriken
›rein Ringfreier Zeitungsdruckpapier-Fabriken, both in
the early part of 1920 they selected Wilhelm Hartman &
commission house, to take charge of a portion of their
ı. Hartman & Co., however, did not at any time handle
half of the export business in newsprint. Their contract
ndicates lasted only two or three months.
to a report at one time circulated in the United States,
ı newsprint industry, in its domestic trade and in its
ı received no Government subsidy. The only Government
given the newsprint manufacturers in the last few years

has taken the form of aid rendered in the matter of securing to them full allotments of freight cars and of coal.

However, the newspaper publishing industry of Germany began in July, 1922, to receive direct Government subsidy. Owing to the unsatisfactory politico-financial situation, many newspapers had become unable to pay for the newsprint they needed. Consequently, on July 21, 1922, the Reichstag enacted remedial legislation, the most important part of which was a provision for a tax of 0.15 of 1 per cent on the value of German exports of all kinds of commodities, the proceeds of which are to be turned into a so-called "Reimbursement fund for the German press." This fund will be used to reimburse the press for the amounts paid for newsprint paper in proportion to the quantity consumed. In ascertaining the amount consumed, paper used for advertising will not be taken into account. A sliding scale is to be used by which the reimbursement per unit of newsprint purchased by any one newspaper varies inversely with the amount purchased. Thus large editions are discouraged. Pending executive regulations fixing the date on which this export tax was to go into effect, the Government was empowered to make the granting of an export license conditional upon the payment of a special contribution to the reimbursement fund amounting to 0.15 per cent of the value of the goods exported.

Certain other provisions of the act of July 21, 1922, took effect on the day the law was passed. A tax of 0.5 per cent was levied on the price of timber sold by persons having the use and profit of forest land of more than 10 hectares in size. The proceeds of this tax go into the reimbursement fund, to be used for the benefit of the press. The law of July 21, 1922, also authorized the Federal Government to establish maximum prices for timber, chemical wood pulp, and printing paper on the basis of production cost figures to be compiled by the Government, and to unite the manufacturers of wood pulp and printing paper and establish a uniform scale of prices.

Scandinavian countries.—Although Sweden, Norway, and Finland are not large producers of newsprint, compared with the United States, Canada, and Germany, they are of considerable importance in meeting the deficiencies in production of such countries as the United Kingdom, France, and (in normal times) Russia. Indeed, the position occupied by these Scandinavian countries in relation to the other western European countries is quite similar to Canada's position in relation to the United States. Owing to development of the newspaper publishing industries and the increasing inability of the forests to supply the necessary pulpwood in the United Kingdom, France, and other western European countries, the northern regions, more plentifully forested, were drawn on for supplemental supplies. The newsprint production of these countries could be considerably increased by converting a larger proportion of their wood pulp into paper, but as the pulp they export is now made into paper by the importing countries, this change would mean merely a shift in the place of conversion, not an increase in the world's supply of newsprint paper or even a larger volume of exports of forest products from Scandinavian countries.

In the export of coarse paper, such as newsprint paper, Sweden, Norway, and Finland have in the last three years (1919–1921) become

titors of the United States in international neutral
ıly have these countries, in combination with Ger-
.uch of the trade in newsprint held by the United
war and up to the summer of 1920 in Latin America
ant importing areas, but beginning with the fall of
sold considerable amounts to American newspaper
ıpetition with American and Canadian newsprint.
.920 Sweden produced approximately 100,000 and
ons, respectively, of newsprint paper. About two-
's production is exported. Norway exports practi-
of her production, which is usually not much more
f Sweden. Finland produced about 100,000 metric
t in 1920, and exported almost all of it.
r Finland marketed most of her newsprint paper in
l England was much the largest purchaser of Finnish
Jnited States was next. Finland has benefited by
levelop new markets in western Europe and later in
s when internal strife cut off Russia from international
doubtless again devote much energy to supplying
e import market of that country is revived, but she
ı her newly developed markets in the west. Finland,
rests and abundant water power, may possibly in a few
reden an Norway in the magnitude of her paper in-
nas large undeveloped resources not possessed by her
vals. As will appear in figures shown below, Finland's
newsprint was greater during the depression of 1921
ither Norway or Sweden. Apparently the Finnish
ıtry, as well as other branches of paper making, can
appreciable part of the demand of the large paper-
ons of western Europe, and even of the United States.
ı Finland is to manufacture into paper an increasing
he pulp produced. The natural advantage of Fin-
nterprise she is showing in developing her resources
ıe independent of Russia promise to make her second
as an exporter of newsprint paper. If the overseas
aken into consideration, Finland will probably gain
cy.
1919 and 1920 the production of newsprint by the
Japanese Paper Mill Owners amounted to 115,000 and
tons, respectively. By supplementing her domestic
with Canadian and Swedish pulp, Japan is now able to
ılly the whole of the domestic demand for newsprint.
ıver, the cost of production in Japan was reported
that European newsprint had no difficulty in com-
the domestic industry in the Japanese market.
rts of newsprint are of little concern to the newsprint-
ıstries of North America and Europe. The United
considerable quantities of newsprint to Japan.

world trade.—The following table shows the exports of
ing 1920 and 1921 compared with 1913, from the
ırtant as exporters of newsprint. It should be noted
lian figures do not include exports to the United States,
ı sense a part of American domestic business. They

include only Canadian overseas exports. Except where specifically indicated that other kinds of printing paper are included, the figures apply to newsprint only.

Country.	1913	1920	1921
	Metric tons.[1]	*Metric tons.*[1]	*Metric tons.*[1]
Germany	[2] 69,000	[2] 45,000	[2, 3] 109,000
Finland	[2] 70,000	90,000	94,000
Sweden	62,000	116,000	112,000
Norway	[2] 98,000	77,000	46,000
Canada [4]	[5] 70,000	79,000	47,000
United States	46,000	42,000	15,000

[1] A metric ton equals 2,204.6 pounds.
[2] Figure is for printing paper (probably mainly newsprint).
[3] Figure is for 12 months ended April, 1922.
[4] Canadian figures include only overseas exports. They are for the years ended Mar. 31, 1914, 1921, and 1922.
[5] Computed from a given total value of $1,568,000 and an estimated unit value of 2 cents per pound; figure is only approximate.

Finland and Germany in the volume of their export trade in newsprint in 1921 surpassed Sweden and Norway. As noted above, Germany's exports of newsprint more than doubled between 1920 and 1921. Finland's export trade increased somewhat; Sweden's decreased slightly. Norway's 1921 exports were much smaller than her 1920 exports. The situation in Germany has been so abnormal, by reason of collapsed exchange; that it is hardly to be compared with the Swedish and Norwegian situations. In the case of Finland, however, the continuity of production and the absence of strikes, lockouts, and other kinds of industrial warfare during the last two or three years stand in such contrast to conditions in the Swedish and Norwegian industries that they can not be explained solely on the ground of advantages accruing from depreciated exchange. Finland probably has a permanent advantage over Norway, Sweden, and Germany as an exporter of newsprint paper.

IMPORTS.

Newsprint.—Imports of newsprint paper increased from 54,022 tons in the fiscal year 1911 to 792,481 tons in the calendar year 1921. The increase has been unbroken. The ratio of imports to total domestic production of newsprint increased from 11 per cent in 1913 to 65 per cent in 1921. Up to 1920 from 98 per cent to more than 99 per cent of newsprint imports came from Canada, or from Canada, Newfoundland, and Labrador. Small amounts came from Norway and Sweden. No newsprint was imported from the latter two countries in the calendar year 1919; in 1920, however, they resumed shipments to the United States in amounts exceeding pre-war volume. Finland also began shipments in appreciable amounts. In the latter part of 1920 shipments of considerable size from Germany were made, amounting to 21,066 tons for the four months from September to December. Shipments from Norway, Sweden, Finland, and Germany continued during 1921 and the first 8 months of 1922. The imports increased in 1921 to such an extent that for that year imports from Canada, though retaining nearly the same aggregate tonnage, decreased considerably in proportion. In 1921 the percentage of

ıda was 82.8; from Sweden, 6.2; from Germany, 4.9; from Norway, 2.5; and from all other countries, 0.7. nports of book paper are of negligible importance. 000 tons were imported annually before the war, an ıbout one-third of 1 per cent of domestic production. dom, the Netherlands, Germany, and Norway were rces. After 1915 imports of book paper practically , when they amounted to 681 tons, or less than one- nt of domestic production.

was sometimes made that because of the raising of ndutiable value of printing paper to 8 cents per pound, r was allowed to enter free of duty. This amount, ry small. In April, 1922, according to the provision aised the limit to 8 cents, the maximum nondutiable) 5 cents.

PRICES.

ıs has been pointed out, the great bulk—about 90 .e newsprint paper output on the North American ught by publishers of the larger dailies on contracts or the delivery of a certain tonnage at a fixed price. is sold on the open or "spot" market, which means mainly through brokers or jobbers and to a small ɔm mill to customer without previous contract.

l table (p. 48) shows the weighted average price, by vsprint paper standard rolls, in carload lots, f. o. b. aid by American publishers for all the contract news- rchased by them in the United States from January, t, 1922. From January, 1913, to June, 1916, the price steady at slightly less than 2 cents per pound. In July, to rise and continued rising until May, 1917, reaching here was little change during the remainder of 1917. uarter of 1918 there was a slight decrease. Between ıy, 1918, it increased once more, reaching a level of 3.75, which it maintained until the fall of 1919, when reasing. This increase continued into 1921. The for January, 1921, was 6.08 cents, after which it de- y to 3.52 cents in August, 1922.

)f contract newsprint has been nominally fixed since

On November 26, 1917, a combination of newsprint s was ordered dissolved under the Sherman Act as a rand jury investigation conducted by the Attorney e charge was that the combination aimed to restrain ontrol prices. On the same date certain of the defendant entered into a formal agreement with the Attorney viding that beginning April 1, 1918, prices and terms r the sale of newsprint paper on the part of the signatory ould be fixed by the Federal Trade Commission, subject the circuit judges of the second circuit. The Federal ission fixed the price of contract roll news in carload mill at 3.10 cents per pound, effective April 1, 1918. judges reviewed the price schedule of the commission d the carload price of newsprint to 3.50 cents. The

price for May and June, 1918, was fixed by the commission at 3.63¼ cents per pound. The maximum price effective July 1, 1918, was fixed at 3.75¼ cents, since which time there has been no change. This price and the others in the schedule, however, are now purely nominal, for it was understood in the agreement between the Attorney General and the paper manufacturers that more than the fixed price might be charged if the customer was willing to pay the additional amount. As the publishers in 1920 were practically competing with each other to secure enough newsprint to enable them to keep running, they were glad to pay considerably higher than the Government fixed price in order to make sure of a steady supply.

Another appended table (p. 49) compares by months from May, 1919, to August, 1922, the American contract prices referred to above with the average prices paid by American publishers on their contracts with Canadian producers and with American open-market prices. In all cases the prices given represent the weighted average of prices actually paid by American publishers.

Comparing American and Canadian contract prices, little difference is to be noted up to 1921, although before then in most cases the Canadian price was slightly lower. This tendency was the most clearly marked from May to December, 1920, when the Canadian price averaged 4.4 per cent lower than the American. Yet from January to March, 1921, the average Canadian price was considerably higher than the American price. Also, although the February and March domestic prices represented a slight decline from the January peak, the Canadian price increased successively in both these months. March represented the peak price for Canadian contract deliveries to the United States. In April the Canadian price fell abruptly by almost a full cent to a point just barely above the American price. From April to July the Canadian price remained higher than the American, but during the rest of 1921 and the first eight months of 1922 the American price was slightly higher.

In spite of Canada's advantage in cost of production, American and Canadian newsprint prices in the American market are about the same. The following table of comparative prices charged on their 1920, 1921, and 1922 contracts by the International Paper Co. and the Canadian Export Co., the principal purveyors of newsprint in the United States and Canada, respectively, shows how closely the American and Canadian prices hang together. It will be noticed that during 1920 the prices of the latter tended to be slightly in the lead of those of the Canadian Export Co., but that the two reached their peak at the same time and have declined together.

Date.	International Paper Co.	Canadian Export Co.	Date.	International Paper Co.	Canadian Export Co.
	Cents per pound.	*Cents per pound.*		*Cents per pound.*	*Cents per pound.*
1920.			1921.		
First quarter	4.50	4.50	Second quarter	5.50	5.50
Second quarter	5.00	4.50	Third quarter	4.75	4.75
Third quarter	5.75	5.50	Fourth quarter	4.00	4.00
Fourth quarter	6.50	6.50	1922.		
1921.			First quarter	3.50	3.50
First quarter	6.50	6.50	Second quarter	3.50	3.50

elative position of the two countries as regards
t would hardly be expected that the prices in the
differ materially, as the two cater principally to

tion of the Canadian Government, above referred
newsprint manufacturers in Canada to dispose of
eir production to Canadian newspapers, also fixed
this 15 per cent should be sold. In brief, the final
ly paid during the whole period of control were 2.5
March 1, 1917, to January 31, 1918; 2.85 cents,
ıe 30, 1918; 3.3 cents, July 1 to November 30, 1918;
ber 1, 1918, to December 31, 1919; 4 cents, January
. Thus during the first quarter of 1920 certain con-
to sell part of their output in Canada for half a cent
han the prevailing export price of 4½ cents. In
Government ruling was resisted by manufacturers,
t law Government control was abolished on April 6,
reme Court of Canada.
re referred to also shows open-market quotations in
s from May, 1919, to August, 1922. This is the most
s of the 1919-20 shortage that could be presented.
the open-market and contract prices average about
.e early summer of 1919 the spot-market price began
om the contract price. From May to August, 1920,
10 cents per pound, or more than twice the contract
eriod. In certain instances a price of as high as 22
l was paid. The smaller newspapers without con-
rly the weeklies and semiweeklies, were having an
d time securing supplies. In many cases they were
rily to suspend publication. This resulted partly
ıat in some cases the larger newspapers were supple-
ontracts by resorting to the open market. The large
sequently agreed among themselves in the spring of
their purchases in the open market to the amounts of
ket purchases in 1919 in order to check the injurious
-market price.
et stringency of the summer lessened, the spot price
Iarch, for the first time, it went below the contract
aged 5.21 cents in April, 1921, compared with an
ct price of 5.41 cents. This fact was a potent influ-
rease in contract prices made in April, 1921. During
mainder of 1921 and the first eight months of 1922
was lower than the contract price.
—From 1910 to the first part of 1916 the prices of book
remely steady, varying from 3½ to 3⅞ cents per pound
ıish, 3¾ to 4 cents for sized and supercalendered, and
r coated and enameled. During 1916, in company with
odity prices, these prices practically doubled; they
ewhat during 1917, but not to their earlier level. They
n during 1918 and decreased during the early part of
second half of 1919 book-paper prices began an almost
which reached its peak about August, 1920, when they

stood as follows: Machine finish, 14 cents per pound; sized and supercalendered, 15 cents per pound; coated and enameled, 18 cents per pound.[8] The high level lasted through October, but with the coming of the business depression prices decreased rapidly. The decrease continued slowly during 1921 and the first part of 1922 until in April, 1922, they stood as follows: Machine finish, 6 cents per pound; sized and supercalendered, 6.7 cents per pound; coated and enameled, 8 cents per pound. After April, 1922, prices began to increase slowly. In the latter part of the summer of 1922 all prices were withdrawn in anticipation of a considerable increase.

TARIFF HISTORY.

Tariff acts, 1883 to 1913.—Until 1897 the tariff laws did not distinguish newsprint from book paper. The acts of 1883 and 1890 both subjected unsized printing paper to a 15 per cent ad valorem duty and sized or glued printing paper to a 20 per cent ad valorem rate. The act of 1894 made this rate 15 per cent for all printing paper, unsized, sized, or glued. The act of 1897 introduced an elaborate sliding scale, newsprint being included mainly under printing paper valued at not above 2 cents per pound. Specific duties were placed on all classes except printing paper valued at above 5 cents per pound, on which the old rate of 15 per cent ad valorem was continued. The actual average equivalent ad valorem duty collected on printing paper under the 1897 tariff in the fiscal years 1907 to 1909 was slightly over 16 per cent in the case of newsprint paper and slightly over 15 per cent in the case of book paper. Thus the act of 1897 made practically no change in the actual average rate of duty collected.

The changes since 1897 have been downward. The act of 1909 lowered the duties on newsprint paper and the cheaper grades of book paper, valued not over 4 cents per pound. The Canadian reciprocity act of July 26, 1911, admitted these grades free from Canada. The benefit of this act was extended by court construction to certain European nations under most-favored-nation agreements. Both of these acts, however, retained the 1897 rates on paper valued over 4 cents per pound. The act of October 3, 1913, removed the duties on all printing paper valued up to 2½ cents per pound, in which class practically all newsprint was included, and lowered the duty on printing paper worth more than 2½ cents per pound, which comprised book paper, to 12 per cent ad valorem. Since then the maximum nondutiable value has been raised twice because of the increasing price of newsprint—once to 5 cents on September 8, 1916, and again to 8 cents on April 23, 1920, with the proviso that in two years it return to 5 cents.

Beginning with 1897, each tariff act has contained a provision for countervailing or additional duties or both on printing paper from any country placing duties or restrictions on exports of newsprint or its raw materials. This has been due to the agitation begun in Canada about 1897 to impose an export duty on or otherwise restrict pulpwood shipments to the United States.[9]

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[8] For the causes of this rise see p. 18.

[9] See Tariff Information Survey, Wood Pulp, for detailed treatment of Canadian provincial pulpwood embargoes.

imposed a countervailing duty on printing paper
of an export duty placed by some other country on
l to the United States. The countervailing duty
l cent per pound of paper for every dollar of export
vood. The act of 1909 imposed an additional duty
cent per pound on all printing paper valued at not
.ts per pound (newsprint) when imported from a
any duty or restriction of any kind on exports of
ood pulp, or pulpwood. The amount of the export
the foreign government was added to the United
l import duty of one-tenth of 1 cent per pound.
ies applied only to newsprint. The act of 1913,
d the extra duties on newsprint and placed a coun-
on printing paper valued above 2½ cents per pound
nen imported from any country placing a duty or
xports of printing paper, wood pulp, or pulpwood.
ng duty was fixed as the highest export duty placed
nent in question on newsprint or on an equivalent
l pulp or pulpwood.

riff.—The placing on the free list of Canadian news-
ad of all newsprint in 1913 has unquestionably been
great expansion of the Canadian newsprint industry
ade, and consequently in the rapid increase of our
rts, for it was almost equivalent to providing territory
he domestic industry. As shown on page 3 imports
11 per cent of domestic production in 1913 to 65 per
There is no evidence that the tariff on book paper
ie amount of imports. The slight reduction in 1913
efore the war, during which the already insignificant
ports dropped to almost nothing.

IONS OF FOREIGN AND DOMESTIC COMPETITION.

NEWSPRINT.

ition.—In the year 1920 consumers throughout the
ed for newsprint paper. The shortage was felt wherever
nting was an important industry. In certain European
sizes of newspapers were drastically cut and Govern-
ng was resorted to. Under conditions like these the
oducers of one country need not fear competition from
es, for every producer, even though his cost of produc-
ively high, has a ready market at a profitable price.
, in 1920 the American newsprint industry, aside from
with Canada, was practically free from foreign competi-
the latter part of 1920, however, world demand has not
enough to absorb the full capacity production of the
print industry. Particularly in Europe has the decreased
n felt. As a result, toward the end of 1920, Germany
ndinavian countries, in order to keep their mills running,
to the United States and to the export markets of the
es. The American newsprint industry quickly felt the
eign competition. Whereas in 1919 imports of newsprint
e equaled less than one-hundredth of 1 per cent of domes-

tic production, in 1921 newsprint imports from Europe equaled 17 per cent of domestic production. Newsprint exports decreased from 8 per cent of production in 1919 to 1.4 per cent in 1921. It was imports from Europe in combination with decreased exports that in the spring of 1922 prevented the unprecedented domestic demand from bringing about a market shortage similar to that of 1920.

With newsprint remaining on the free list it is highly probable that imports from Europe will continue. A corporation has recently been formed in New York for the purpose of marketing in the United States the product of certain Scandinavian newsprint mills. As closer contacts between European producers and United States consumers are established, European mills will become better able to suit the exact requirements of United States newspapers. The North American newsprint industry must henceforth reckon on competing in its domestic market with substantial shipments of European newsprint.

More important in the long run than the question of the distribution of sales of newsprint among the different countries of the world are the questions: (1) Whether or not the demand of the world as a whole for newsprint is to increase or decrease, and (2) how the world's supply is going to adjust itself to the demand.

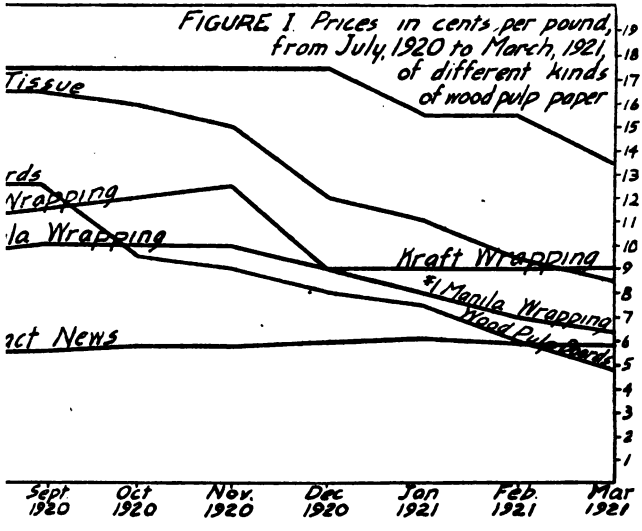
So far as demand goes, the future seems assured. It may be assumed that as the masses of people in the world become more educated, newspaper reading will steadily expand. The experience the selling world has had with large-scale advertising is such as to make likely an extensive newspaper advertising in the future. The decline in demand for newsprint, although unquestionably taking place in the early part of 1921, was less bound up in the general business depression, which at the start of 1921 had already been prevailing for some months, than was the case with the majority of commodities. It came much later than the fall in general prices and was small in comparison. The adjustment of the industry to the decrease in demand was accomplished with none of the throes experienced in many other industries. At the time the first important decreases in the price of contract newsprint in the United States were announced (late February and early March, 1921) the American industry was reported to be working at practically full capacity.

American consumption of newsprint in 1921 was very little less than in 1920, and amounted to considerably more in the first eight months of 1922 than in the corresponding period of 1920. In April, 1922, there was recorded the greatest consumption of any month in the history of the United States up to that time.

The demand for newsprint is based on factors somewhat different from those which influence the demand for most other commodities. The average man's purchase of newspapers is perhaps as great in time of business depression as in time of business prosperity, for he ordinarily does not consider decreasing the amount of news he reads as a means of financial retrenchment. In other words, the purchasing power of the eventual consumers of newsprint is a more or less stable affair, influenced more by such factors as an improvement in public education or an awakening of interest in the affairs of the world than by the factors contributing to cycles of business prosperity and depression. Also the demand for advertising space, although intimately connected with business competition, does not necessarily vary with

ısiness being transacted by the advertisers. The ısing is part of the total cost of the production and mmodity, just as is the cost of raw materials or of a depression in the demand for that commodity the demand for the raw materials and labor entering dity, while the amount of advertising done is not ısed. It is likely to be large during a period of was in the spring and summer of 1920, especially roducers and distributors think they see a buyers' ·izon, yet a business man may find it desirable to ›avily at a time when it is hardest to dispose of his ınce, the record consumption of the spring of 1922 ıtes took place at a time when industrial conditions till depressed.

position of newsprint paper in relation to demand he movement of contract newsprint prices in the



from July, 1920, to March, 1921, compared with the the prices of other important grades of wood-pulp he same period. Inasmuch as the conditions of superials and processes of production are almost the same kinds of paper using new wood pulp as a raw material, reflected by the comparative price movements are on the side of demand. The figure above portrays these graphic form. The prices for grades other than news- ıach case, those charged by some particular company ıcular grade made by it, and are used here as repre- ıe trend of the market for manila and kraft wrapping ›ulp blotting and tissue paper, and wood-pulp boards ıriod concerned. The prices indicated are not in any ıen as indicative of the relative values of the different ır as classes. The price for contract newsprint is the rage price of contract standard rolls actually paid by ›lishers during the whole of each month concerned.

The diagram shows the strength of the newsprint market in comparison with the market for most other grades of wood-pulp paper. Where, in general, the latter sagged deeply and a large number of the mills producing these kinds of paper were forced temporarily to shut down, the price of contract newsprint from domestic mills increased steadily up to January. It decreased a trifle in February and March. However, the average price of Canadian deliveries of contract newsprint to the United States (not shown on the diagram) continued to increase steadily to a peak in March.

The fact that the spot price of newsprint in March, 1921, was only about half what it was in the summer of 1920 indicated that the large newspapers had ceased buying in the open market and that the small newspapers, consuming 10 per cent of the newsprint used in the United States, could easily buy their necessary supplies. The decline in the spot price beneath the contract price forecasted a small decrease in the latter, for it naturally initiated a tendency to rely on the spot market for a part of the supply previously purchased on contract. However, it is evident that the amount of additional demand which the spot market can supply without an immediate increase in price, far beyond the level of the contract price, is severely limited; the case is analogous to the movement that would take place between two containers filled with water, one nine times as large as the other, connected by a pipe, the level of water in the smaller being 1 inch or so lower than the level in the larger one. The flow of water resulting would add an inch to the level in the smaller container, but the level in the larger container would fall only one-ninth of an inch.

Thus, as far as we can forecast, the world demand for newsprint paper, although not likely soon again to produce such a shortage as in 1919–20, when in a great many lines producers and distributors alike throughout the world were selling on a highly speculative market, is likely to be stable and dependable.

The question of supply is perhaps more difficult to forecast. A suddenly increased demand for a commodity with its resulting high prices and abnormal profits, ordinarily calls forth an increase in production. Under this new condition we have manufacturers whose cost of production, had they produced in the days of the older, smaller demand, would have meant producing at a loss. Then, if the demand recedes, these marginal producers are forced out of business, there is an oversupply, and cutthroat competition prevails between domestic producers within a country and between different countries. So goes frequently the course of a shortage in a commodity.

In the newsprint industry, however, as we have seen, the transition to a less extraordinary basis was accomplished, at least in the United States, with little temporary maladjustment. One reason is that it takes practically two years to put a new newsprint mill into operation, so that there had not been much opportunity for the expansion of plant capacity to meet the increased demand. Another reason is that when the demand was heaviest certain paper machines normally manufacturing other grades of paper were diverted to newsprint making, although making it often at a relatively high cost. When the demand declined these machines could again be used to make the paper they originally made. There was to this extent flexibility of plant capacity to accord with demand.

A more fundamental reason is that the wood-pulp and paper industry of the world has reached a point where it is much harder than in

cure the requisite supplies of pulpwood. This fact
in the last decade in the United States through the
se in production. Canada and Finland still have
wood, but they are being used at an ever-increasing
d Norway are already practically at the limit of
development of the forests of Russia and such
laska has so far not offered sufficient return to be
extensive scale. These areas can be made use of
production and transportation to consuming centers
the regions where pulp and paper are now made.[10]
former Chief Forester of the United States, says as
our lumber and pulpwood resources:

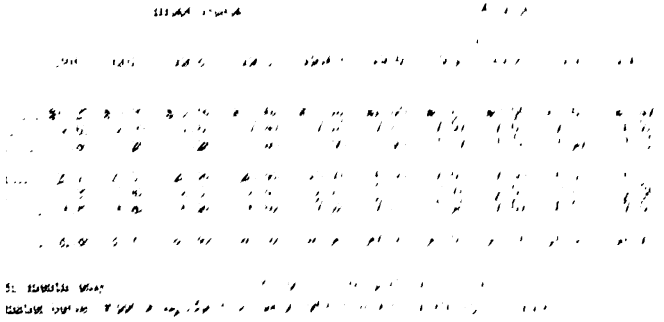
krupt and we do not know it. Because there has always been
ound, we have placidly assumed that there always would be,
ts are against us.

nd the supply factors hence unite to make likely for
me a strong position of wood-pulp papers, particu-
in the world's markets. Unless some satisfactory
od pulp is discovered, the world will soon be forced
d production on a scientific crop basis, as has already
tain countries, in order to insure against a steadily
of paper. Such action, however, even if begun now,
effect for 20 or 30 years on the supply of pulpwood,
nood during that time of serious overproduction of
rs is small. A few decades hence, when pulpwood is
vested as grain is cultivated, supply conditions may
and there may be danger of overproduction, though
able.

OF AMERICAN AND CANADIAN NEWSPRINT PAPER.

a few years will probably export more newsprint to
tes than is produced in this country, the relations of
nd Canadian newsprint industries require analysis
costs of production in United States and Canada.
ll comparative investigations that have been made,
nadian cost of production is lower than the average
The following table shows the average cost of manu
of newsprint paper, not including depreciation allow
nited States and Canada and U. S. in 1910, as determined
States Tariff Board, and for the years from 1912 to the
U. as given in a study by the Federal Trade Commission

Average cost of manufacture



In dealing with figures for average cost of production it must, of course, be borne in mind that the manufacturers are actually producing at widely varying costs. Thus in the United States the costs of 35 of the principal newsprint mills varied from $25.77 to $44.41 per ton for different mills in 1915 and from $24.93 to $46.94 per ton (including depreciation) in the first half of 1916. Nevertheless, average figures more or less satisfactorily represent the general trend of cost conditions.

It will be noted that from 1910 to the middle of 1916 there was a slow but unbroken decrease in the cost of production in the United States, and that the Canadian cost, although slightly higher in 1913 than in 1910, declined steadily from 1913 to 1916. In April, 1918, it was estimated that the average cost of producing newsprint in all important mills in the United States and Canada combined had risen to $56 per ton. In the latter part of 1919, however, according to the Canadian Government auditor, the cost of production in the more efficient mills of Canada was only about $50 per ton.

The estimate of the present cost differential in favor of Canadian newsprint mills is about 10 per cent as generally accepted. The last detailed comparison is the one presented in the above table. In each of the years in question the Canadian cost was considerably lower than the American cost, ranging from $25.71 to $28.63 per ton, in comparison with a range of $30.23 to $32.88 for the United States.

The items mainly responsible for this differential were ground wood and sulphite, although Canadian labor was also less expensive than American labor. The proportions of total Canadian to total American costs in the period covered and also the relative proportions of costs of raw material were as follows:

Ratio of Canadian to American cost.

Year.	Total.	Materials only.
	Per cent.	*Per cent.*
1910	83.7	74.3
1913	90.2	82.8
1914	89.6	85.5
1915	86.4	82.6
1916	85.0	82.7

Canadian costs of material ranged between 15 and 26 per cent lower than American costs of material, while the total cost of production ranged from 10 to 16 per cent lower in Canada than in the United States.

An idea of the relative importance of particular items entering into the cost of newsprint paper can be gained from the following table showing the average ratio of the cost of each item to the total cost in American and Canadian mills combined in the first half of 1916:

Stock:	Per cent.
Sulphite	23.36
Ground wood	34.30
Filler	.80
Alum	.63
Sizing	.21
Miscellaneous	1.96
Total	61.26

	Per cent.	
.....	9.99	
.....	2.51	
.....	1.36	
.....	.30	
.....	.22	
.....	3.54	
.....	7.28	
ntals.....	1.08	
.....	3.60	
.....		29.88
ce.....	1.33	
nistrative.....	1.96	
.....		3.29
.....		5.57
.....		100.00

constituted over three-fifths of total expense, while conversion of pulp into paper was only 10 per cent. ntry which has relatively cheap supplies of wood dvantage, for the cost of ground wood and sulphite utes 58 per cent of the total cost of production, ciation allowance.

ntage, then, lies principally in her lower cost of the main, her newsprint mills use wood pulp made hemselves, while American mills either manufacture gher cost than that of the Canadian mills or purchase narily a higher cost than that for which they could es.

wood-pulp production cost is, in turn, due almost ie lower cost of her pulpwood. There are several Canada has the advantage of greater accessibility , with consequently a smaller expense for transpor- and other pulpwoods grow most plentifully in the s can be readily floated to the mills on the numerous eams of the Provinces. This is a much less expensive l transportation, which is necessarily used by most of a the United States. Again, Canada has the immense ing able to use pulpwood from the extensive stands own lands, the export of which to the United States forbidden.[11]

l provincial governments have encouraged develop- od areas by leasing Crown lands and water powers s, by establishing fire-protection systems, by building dwaters, and by certain beneficial regulations relative

a Canadian pulpwood production cost is a result of of the three components into which the production mmodity resolves itself—labor cost, return to capital, the raw material in the ground, or wherever it origi- first place, the mere increase in Canadian wages to es level, which is generally admitted to have occurred, tion of about the same average capacity on the part

ion Survey, Wood Pulp, p. 26.

of the laborers of the two countries to work and to work efficiently, do not necessarily, and do not in this case, mean the same labor cost per ton. The reason for this is that, because of the greater accessibility of Canadian pulpwood and the easier means of transportation available as compared with the United States, Canadian mills are able to dispense with a considerable share of the labor necessary for getting pulpwood to American pulp mills. It is just a case of using less labor per ton of output, not a case of using the same amount and paying each unit less.

Thus the labor cost of getting out the pulpwood in Canada remains smaller than in the United States, in spite of the fact that wages in the two countries may now be regarded as approximately equal and independent of the question of relative labor efficiency, which is a controversial one.

The other factors causing Canada's cost of pulpwood to be lower are the differentials in the other two components of production cost above mentioned. One is closely linked with the saving in labor cost—it is the saving on return to capital (tools, machinery, railroads, etc.) resulting from the fact that fewer services of capital are required in Canada to get the pulpwood to the pulp mill. The third, and probably the most important of them all, is the low cost at which most of the Canadian newsprint companies acquired large tracts of pulpwood timber in Canada and the low cost at which they are able to hold it for future use, in contrast with the situation of certain important American companies which are forced through their own inadequate holdings of pulpwood stands and by the Canadian provincial pulpwood export embargoes to secure their pulpwood from the reduced woodlands of the United States or from the fee lands of Canada—in either case at a cost much higher than that of their Canadian competitors.

It will be noted that in the main these three components of saving in pulpwood production cost in Canada as compared with the United States have their basis in the advantages to the Canadian mills of accessibility to the pulpwood areas and of freedom to use their large holdings of Crown-land timber, bought cheap, as well as in the advantages conferred through governmental interest in the development of the Canadian pulp and paper industry.

Another factor, in addition to the smaller cost of raw materials, apparently is in favor of Canada. In 1911 the United States Tariff Board found that on the average the efficiency of equipment was slightly greater in Canada than in the United States. In the last decade this efficiency differential has undoubtedly increased, for during that time Canada has multiplied her output many times through building new mills and installing up-to-date machinery, while very little extension of plant has taken place in the United States. We have seen that Canada possesses a much greater proportion of wide and fast-operating paper machines than the United States. [12]

The two factors discussed—the lower cost of pulpwood to Canadian mills and the superior efficiency of Canadian paper-mill equipment—are apparently the only important differentials in Canada's favor at the present time, for wages are now about the same in the two coun-

[12] See section on Equipment, p. 8.

the time the cost figures given in the table on led the factor of comparative labor cost was of causing Canada's paper production cost to be

nsiderably greater effect on the total paper cost vo countries than would be indicated merely by accounts for only 10 per cent of the cost of con- aper. The percentage of cost of production of ributable to cost of labor increases the further he processes of production. Compounding the ages during the various processes of conversion he ground to the finished paper results, of course, proportion of total labor cost to total cost of pro- r than the proportion of labor in the single process lp into paper.

ward equalization of the wage scale of the two ably been the principal factor in bringing Canada's of 15 per cent lower cost of newsprint production mated as 10 per cent. It should be remembered, labor is required per cord in Canada than in the get the pulpwood from the forests to the mills. emains in Canada's favor.

anadian export trade.—Canadian overseas export of n gaining on American overseas trade. The follow- anadian overseas exports of newsprint in the years 1919 to 1922, compared with American overseas endar years 1918 to 1921:

Calendar year.	From United States (short tons).	From Canada.	
		Year ended Mar. 31.	Short tons.
	94,243	1919	[1] 68,337
	108,325	1920	85,958
	44,848	1921	86,788
	16,180	1922	51,610

proportion of book paper.

arent that Canada's export trade survived the world 21 in much better condition than did the American

ended to concentrate, apart from her shipments to es, on British dominions, while United States news- mainly to Latin-American countries. Nevertheless, by y be said that the Canadian overseas export trade and xport trade unite to form the foreign business of one try—the North American newsprint industry, the becoming more important as Canada's proportion of rint output of the continent increases.

American-Canadian competitive relations. In sum- mpetitive relations of Canada and the United States,

it should once more be emphasized that only technically are we dealing with an international issue. In actuality, a large part of the newsprint trade between Canada and the United States is between Americans north of the border line and Americans south of the border line, the Canadian newsprint industry being in considerable degree a northward extension of the American newsprint industry, made with the help of American capital.

The present condition is quite similar to competition between two sections of the same industry, such as might exist between two geographical sections entirely within the United States, one of which has an average lower production cost than the other. In times of depression the low-cost section is naturally able to do the better business, both in its domestic and in its overseas sales.

Nevertheless, even though our relation to the Canadian newsprint industry is not one that easily lends itself to adjustment through the tariff, it is fraught with great significance as regards the future of the industry. The Canadian industry is bound to become increasingly important, for the American industry is becoming more and more remote geographically from the main sources of pulpwood supply, and Canada is determined to make the most out of her possession of large pulpwood forests, keeping them as far as possible for her own industry to the exclusion of the American industry. American newsprint companies must manufacture increasingly in Canada, or at least establish their pulp mills there, even if access to Canadian Crown-land timber is made freer.

The fact is that, except for certain companies in the United States which have adequate pulpwood holdings in Maine and certain companies near the Canadian border which foresightedly provided themselves early with large tracts of freehold pulpwood lands in Canada and because of their comparative nearness to these supplies can transport their pulpwood reasonably cheaply, the American newsprint industry, as far as it is confined to the northeastern portion of the United States, has seen the end of expansion for many years to come.

Canada will almost inevitably soon produce more newsprint than the United States. In time Alaska and perhaps the western part of the United States will develop newsprint production on an important scale. But they will always be handicapped by the fact that they are farther distant than eastern Canada from the main consuming markets.

Significance of transportation factor.—So it is that the factor of transportation together with the economies of integration of both the process of pulp making and the process of paper making are the ultimate factors determining the order of development of the pulpwood areas of the world and the dates of moving on to new areas. Factors like sudden changes in tariff, for example, putting Canadian newsprint imported into the United States on the free list in 1911, and excluding the main pulpwood supplies of one country from its more highly industrialized neighbor, though exerting much influence on geographical shifts in the industry, are of minor importance in the long run.

The high cost of transportation of logs always causes the wood-pulp industry to be located near the pulpwood forests; naturally the forests nearest the newsprint-consuming centers are chosen. The newsprint

then located close to the wood-pulp mills because
ved thereby in the process of manufacture, and
to transport the finished newsprint than it does
lp. As the forests recede from the mills the tend-
d-pulp mills to follow them. Artificial national
tariff measures and pulpwood embargoes, tend to
ement, as they did beginning about 1910 in the
nt of American capital into Canada. As the pulp
the receding forests, the newsprint mills, though
follow in their turn. They tend to stay near the
he economy gained thereby is so much less pro-
hat gained through the pulp mill being near the
tendency is much less clearly defined.
ove tendencies toward migration of the industry
the full because of the fact that the pulpwood
eldom completely cut out, and tends to grow in
ed. The demand for newsprint and other papers
ulp and ground wood ordinarily is strong enough
urn to pulp mills which get their pulpwood from
ed areas near them or else bring it at a heavy
stance or to insure such a return to paper mills
ulp from distant pulp mills, that it is not worth
up their costly immobile plants and move nearer

ve may expect the greater part of the present news-
ls in the United States to remain, but not to in-
y in number nor to install much new modern
ighly likely that agitation for reforesting and the
of our great need for pulpwood supplies will result
e such crop system of pulpwood planting as is
n European countries. But even then a material
ain with Canada. How vigorously later developed
laska, having the advantage of virgin pulpwood
advantage of a long haul for the finished product,
pete with regions near the eastern cities having the
ort haul for the finished product and the disad-
rice for pulpwood, is now dependent on too many
permit of prognostication. But as long as Canada
nds, and until her forests reach the present state
ne American forests, the newsprint industry of the
t grant first place to that of Canada.

BOOK PAPER.

ok-paper imports amounted in the calendar years
ne-fifth and one-tenth of 1 per cent, respectively, of
n, there can hardly be said to be a pressing tariff
ok-paper industry. Even in the fiscal year 1914,
at their highest, they amounted to only one-third
mestic production.

STATISTICAL TABLES.

Production in United States, by States.

NEWSPRINT PAPER.

[From Federal Census.]

State.	1899 [1]		1904		1909	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.		*Tons.*		*Tons.*	
New York	204,957	.....	347,546	.....	374,808	$14,662,245
Maine	112,995	.....	215,307	.....	[2] 311,608	[2] 11,355,479
Wisconsin	90,075	.....	121,749	.....	169,151	7,201,706
Minnesota	([3])	.....	25,379	.....	[2] 39,116	[2] 1,646,753
Vermont	22,685	.....	34,396	.....	16,455	688,363
All other	138,500	.....	168,445	.....	[1] 264,116	[1] 11,301,014
Total	569,212	$20,091,874	912,822	$35,906,460	1,175,554	46,855,560

State.	1914		1919	
	Quantity.	Value.	Quantity.	Value.
	Tons.		*Tons.*	
New York	489,136	$19,869,081	463,341	$35,922,875
Maine	336,020	13,262,166	424,706	28,507,697
Wisconsin	135,336	5,551,537	115,987	9,738,081
Minnesota	111,002	4,210,004	117,386	9,580,742
Vermont	31,223	1,353,012	28,052	2,017,361
All other	210,567	8,696,794	174,408	12,792,603
Total	1,313,284	52,942,774	1,323,880	98,559,359

BOOK PAPER, PLAIN.[4]

[From Federal Census.]

State.	1899		1904		1909	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.		*Tons.*		*Tons.*	
Massachusetts	39,551	.....	93,439	.....	88,744	$7,103,256
Pennsylvania	52,366	.....	57,779	.....	73,763	5,579,757
Michigan	44,433	.....	48,742	.....	72,677	5,231,704
Maine	30,041	.....	66,797	.....	82,169	5,931,547
New York	27,611	.....	29,092	.....	66,139	4,303,427
Ohio	13,861	.....	17,825	.....	48,589	3,902,300
Wisconsin	25,206	.....	49,989	.....	57,493	3,795,920
New Hampshire	9,137	.....	12,039	.....	13,400	1,046,167
All other	39,887	.....	58,798	.....	72,642	5,952,596
Total	282,093	$19,466,804	434,500	$31,156,728	575,616	42,846,674

State.	1914		1919	
	Quantity.	Value.	Quantity.	Value.
	Tons.		*Tons.*	
Massachusetts	106,845	$8,957,973	111,788	$18,045,565
Pennsylvania	118,590	8,807,670	96,731	14,921,845
Michigan	88,840	6,990,774	97,220	13,976,418
Maine	94,987	6,947,240	([3])	([3])
New York	78,917	5,356,874	96,252	13,138,331
Ohio	65,596	5,128,713	([3])	([3])
Wisconsin	74,560	5,117,812	93,207	12,463,685
New Hampshire	17,708	1,304,945	([3])	([3])
All other	140,583	9,884,220	323,622	45,724,932
Total	786,626	58,496,221	818,820	118,270,776

[1] Calendar year.
[2] Small amounts of sheet newsprint for Maine and Minnesota included in "All other States."
[3] Included in "All other States."
[4] Machine finish and sized and supercalendered. Plain book paper constitutes about five-sixths of total book-paper output.

Production in United States, by years.

NEWSPRINT PAPER.

[From Federal Census.]

Calendar year.	Quantity.	Value.
	Tons.	
	569,212	$20,091,874
	912,822	35,906,460
	1,175,554	46,855,560
	1,313,284	52,942,774
	1,323,880	98,559,359

BOOK PAPER, ALL GRADES.[1]

	Net tons.	
	323,208	$23,151,138
	476,487	34,639,057
	694,905	54,798,840
	934,979	73,499,514
	983,258	149,479,953

NEWSPRINT PAPER.

ts Nos. 49 and 79, 65th Cong., and Federal Trade Commission Bulletins.]

Calendar year.	Quantity.
	Tons.
	1,304,595
	1,282,934
	1,239,122
	[2] 1,355,196
	1,359,012
	1,260,285
	1,374,517
	1,511,968
	1,226,189

BOOK PAPER, ALL GRADES.[1]

	Net tons.
	892,283
	849,157
	914,823
	1,104,464
	725,992

aper, coated, cover, and plate, lithograph, map, wood cut, etc.
estimated.

ion in United States, by months, 1919, 1920, and 1921.

NEWSPRINT PAPER.

Month.	1919	1920	1921
	Short tons.	*Short tons.*	*Short tons.*
	116,154	129,663	123,830
	103,248	114,235	103,040
	115,746	127,847	107,532
	116,278	128,269	115,408
	105,819	129,230	78,868
	114,896	130,380	87,724
	113,929	129,853	94,247
	113,413	128,818	102,277
	114,434	121,005	98,898
	125,216	124,818	101,884
	116,603	122,993	104,604
	122,781	124,857	107,877

Production in United States, by months, 1919, 1920, and 1921—Continued.

BOOK PAPER, ALL GRADES.

Month.	1919	1920	1921
	Short tons.	*Short tons.*	*Short tons.*
January	70,443	96,419	64,382
February	62,616	85,532	56,687
March	63,699	95,851	59,832
April	67,628	95,251	51,380
May	76,821	92,856	52,642
June	71,938	94,957	53,934
July	75,613	95,526	48,527
August	82,737	94,424	59,711
September	81,024	94,142	62,416
October	89,400	93,849	72,139
November	84,085	89,564	73,544
December	88,779	76,093	70,798

Production in world, 1906–7.

PRINTING PAPER.[1]

Country.	Quantity.	Country.	Quantity.
	Net tons.		*Net tons.*
United States	1,594,000	Belgium	70,000
Germany	557,000	Norway	46,000
United Kingdom	312,000	Finland	40,000
France	227,000	Holland	39,000
Austria-Hungary	146,000	Spain	35,000
Russia	124,000	Switzerland	26,000
Canada	120,000	All other	254,000
Sweden	101,000		
Italy	74,000	Total	3,645,000

[1] From Commercial Report No. 13 of the Imperial Royal Austrian Trade Museum, by Franz Krawany.

Imports by countries.

NEWSPRINT PAPER.[1]

[Fiscal years.]

Imported from—	1911		1912		1913		1914	
	Net tons.	Value.	Net tons.	Value.	Net tons.	Value.	Net tons.	Value.
Canada	53,108	$1,968,385	55,563	$2,101,023	146,733	$5,646,289	274,842	$10,634,926
Norway	772	36,591	651	31,548	571	27,896	2,068	85,725
Sweden	126	4,791	595	20,714	163	6,346	745	27,694
Germany	16	732	40	1,956	12	567	353	14,252
All other countries	[2]	3	5	260	[3]	11	63	2,511
Total	54,022	2,010,502	56,854	2,155,501	147,479	5,681,109	278,071	10,765,108

Imported from—	1915		1916		1917		1918	
	Net tons.	Value.	Net tons.	Value.	Net tons.	Value.	Net tons.	Value.
Canada	329,314	$12,742,743	438,212	$16,646,891	490,520	$23,502,671	571,489	$32,416,444
Norway	2,449	97,573	113	4,589	1,227	112,798	.....	.....
Sweden	743	32,072	123	5,941	56	4,725	166	12,802
Germany	170	7,039	.....	.....	.....	.....	.....	.....
Newfoundland and Labrador	.....	.....	117	4,678	.....	.....	30,204	1,761,646
All other countries	106	4,025	181	8,505	.....	.....	22	1,953
Total	332,782	12,883,452	438,746	16,670,604	491,804	23,620,194	601,881	34,192,845

[1] Includes "printing paper for books and newspapers" valued at not above 2½ cents per pound up to and including Sept. 7, 1916; at not above 5 cents per pound from Sept. 8, 1916, to Apr. 23, 1920; and at not above 8 cents per pound from Apr. 24, 1920, on. Data for different countries for 1910 not separately reported.

[2] 161 pounds.

[3] Less than one-half of 1 ton.

TRADE OF COUNTRY—CONTINUED.

NEWSPRINT PAPER—Continued.

(Calendar years.)

	1919		1920		1921	
Values.	Net tons.	Value.	Net tons.	Value.	Net tons.	Value.
1,225,716	628,479	$43,450,529	[illegible]	[illegible]	[illegible]	[illegible]
2,482			[illegible]	$38,107	30,131	[illegible]
			[illegible]	[illegible]	[illegible]	[illegible]
			[illegible]	[illegible]	[illegible]	[illegible]
488,778	3,208	198,413	476	19,40	440	[illegible]
16,266	67	[illegible]	1,[illegible]92	[illegible]	[illegible]	[illegible]
1,023,161	627,731	$3,974,294	[illegible]	[illegible]	[illegible]	[illegible]

Unmanufactured.

BOOK PAPER.

(Fiscal years.)

1911		1912		1913		1914	
s.	Value.	Net tons.	Value.	Net tons.	Value.	Net tons.	Value.
5	$91,541	984	$137,179	961	$138,379	1[illegible]	[illegible]
7	68,077	765	81,[illegible]28	801	7[illegible],307	[illegible]	[illegible]
3	145,408	855	15,[illegible]43	580	11,[illegible]10	[illegible]	[illegible]
0	20,575	317	20,[illegible]12	405	2[illegible],[illegible]17	[illegible]	[illegible]
0	172,163	443	9[illegible],[illegible]83	750	77,[illegible]05	[illegible]	[illegible]
5	497,168	2,960	427,[illegible]07	4,[illegible]00	4[illegible],[illegible]14	4,[illegible]00	[illegible]

1915		1916		1917		1918	
s.	Value.	Net tons.	Value.	Net tons.	Value.	Net tons.	Value.
15	$112,543	484	$84,[illegible]94	71	$10,[illegible]40	[illegible]	[illegible]
33	70,227	145	1[illegible],[illegible]44	[illegible]	[illegible]	[illegible]	[illegible]
73	7,477	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
50	14,949	11	[illegible]00	[illegible]3	13,[illegible]14	[illegible]	[illegible]
97	31,364	81	4[illegible],[illegible]16	4[illegible]	30,[illegible]22	[illegible]	[illegible]
84	236,460	721	1[illegible]4,[illegible]55	99[illegible]	2[illegible],[illegible]31	[illegible]	[illegible]

(Calendar years.)

1918		1919		1920		1921	
ons.	Value.	Net tons.	Value.	Net tons.	Value.	Net tons.	Value.
[illegible]	$2,[illegible]93	[illegible]	$[illegible],[illegible]04	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible],[illegible]46	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	$[illegible],[illegible]99	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

Prod... — *...nsumption—Revenue.*

...APER[1] VALUED AT NOT ABOVE 8 CENTS ...S POUND[2]).

...ntity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.[3]
Pounds.				*Per cent.*
...,633,982	$316,406	[4] $53,289	$0.018	16.84
...,736,483	549,957	[4] 88,972	.019	16.18
...,135,033	643,775	[4] 104,269	.019	16.20
...,719,597	1,663,587	[5] 224,293	.019	13.48
...,025,518	2,009,888	[5] 259,528	.019	12.91
...,122,330	1,218,638	.....	.019	.....
...,752,205	940,299	[5] 131,691	.019	14.01
...,729,463	4,513,584	.....	.019	.....
...,290,384	1,167,109	[5] 172,870	.019	14.81
...,375,399	10,408,495	.....	.019	.....
...,086,920	358,559	[6] 50,204	.020	14.00
...,640,234,217	12,883,452	.....	.020	.....
...,577,492,582	16,670,604	.....	.019	.....
...,883,353,860	23,614,834	.....	.024	.....
1,394,227,574	34,193,534	.....	.028	.....
.....	1,198,034,042	35,023,092	.....	.029	.....
.....	1,355,782,140	43,685,109	.....	.035	.....
.....	1,459,687,393	68,598,505	.....	.047	.....
.....	1,384,982,674	79,123,368	.....	.049	.....

...RINTING PAPER[1] VALUED ABOVE 8 CENTS PER POUND[2]).

	Pounds.				*Per cent.*
...r and al...	3,499,274	$280,413	$42,751	$0.080	15.25
.....	3,344,384	262,565	40,282	.079	15.34
.....	4,258,881	303,507	46,754	.071	15.40
.....	3,937,203	257,798	40,009	.065	15.52
.....	6,395,579	498,305	76,879	.078	15.43
.....	5,743,776	331,992	52,448	.058	15.80
.....	6,253,577	342,081	53,658	.055	15.69
.....	6,030,184	288,357	36,359	.048	12.61
.....	710,388	21,069	.....	.030	.....
...r cent.....	4,611,193	237,261	28,471	.051	12.00
do.....	1,462,923	125,755	15,090	.086	12.00
do.....	1,010,813	115,881	13,933	.115	12.02
do.....	304,595	42,500	5,100	.140	12.00
do.....	230,588	44,431	5,332	.191	12.00
...r cent minus ...per cent.[7]	91	14	1	.154	9.60
...r cent.....	164,886	58,319	6,998	.354	12.00
do.....	4,156,464	493,411	59,209	.118	12.00
do.....	1,364,193	196,726	23,607	.144	12.00

...ened, sized, or glued, suitable for the printing of books and newspapers, but not for covers or bind...
...other than paper commercially known as handmade or machine handmade paper, Japan ... Japan paper, by whatever name known).
...rates not found up to Sept. 8, 1916: 5 cents Sept. 9, 1916, to Apr. 23, 1920; 8 cents Apr. 24, 1920, on.
...Additional and countervailing duties have been included where collected.
...Includes countervailing duty.
...Includes additional specific duty and duty equal to export charge.
...Includes additional duty.
...Reciprocity treaty with Cuba.

Domestic exports.

NEWSPRINT PAPER.

[Fiscal years.]

to—	1911		1912		1913		1914	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.		*Tons.*		*Tons.*		*Tons.*	
om	13,405	$672,699	5,998	$281,185	3,335	$168,056	2,699	$99,998
	2,993	139,975	4,637	196,172	4,693	167,359	3,772	151,783
	876	52,389	958	46,635	570	27,919	289	13,295
	2,479	120,378	3,551	165,288	4,433	208,201	5,978	286,257
	11,784	547,578	14,731	728,613	14,309	709,049	8,844	447,905
	32	1,574	7	348	154	9,145	140	7,347
	5,155	247,895	1,779	88,624	1,546	75,692	747	37,141
	9,675	497,733	15,992	798,781	15,926	795,993	13,282	945,785
ries	3,236	155,363	4,214	198,505	5,857	280,164	4,482	235,743
	49,755	2,434,964	51,787	2,581,529	50,213	2,450,539	44,483	2,177,483

	1915		1916		1917		1918	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.		*Tons.*		*Tons.*		*Tons.*	
			2,440	$113,776	4,462	$215,326	20,170	$1,057,358
	10,651	$501,041	4,777	247,906	3,707	201,685	4,133	225,749
	247	11,673	627	34,983	623	27,245	1,125	57,111
	1,489	91,825	2,214	127,686	5,091	453,296	4,115	345,111
	6,141	282,429	7,628	376,011	7,639	473,601	9,534	704,386
	16,138	806,217	21,870	1,099,360	22,245	1,178,987	24,928	1,388,612
	2,059	112,941	2,646	140,741	4,282	339,371	12,214	1,000,612
	2,052	99,580	2,080	105,419	3,223	205,948	7,795	597,678
	15,376	744,356	6,995	286,394	5,915	290,219	10,389	532,302
s	8,688	429,184	12,345	633,205	15,276	1,167,276	16,138	1,269,386
	62,841	3,079,137	63,622	3,115,811	72,473	4,557,952	119,151	8,286,618

[Calendar years.]

	1918		1919		1920		1921	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Net tons.		*Net tons.*		*Net tons.*		*Net tons.*	
	22,487	$1,757,279	23,352	$1,941,214	67	$7,394		
	1,536	177,327	2,827	261,637	148	34,917		
	201	26,382	352	34,940	841	135,627		
	2,295	172,528	1,591	161,764	216	45,[illegible]		
	8,171	604,773	9,962	925,479	8,185	1,075,[illegible]		
	18,189	1,388,413	26,235	2,185,846	20,679	2,141,[illegible]		
	8,923	752,231	15,496	1,393,940	1,928	279,[illegible]		
	4,723	404,928	2,503	209,043	699	94,[illegible]		
	2,004	156,048	3,102	278,251	1,282	137,[illegible]		
	2,362	275,816	4,219	550,949	2,659	491,[illegible]		
	2,385	295,031	3,195	413,242	554	87,[illegible]		
	10,198	798,368	5,528	498,935	675	137,[illegible]		
	13,265	1,169,172	12,006	1,236,711	7,956	1,302,[illegible]		
	98,739	7,978,296	110,268	10,091,951	45,889	5,870,[illegible]		

Domestic exports—Continued.

BOOK PAPER.[1]

[Fiscal years.]

Exported to—	1911		1912		1913		1914	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.		*Tons.*		*Tons.*		*Tons.*	
United Kingdom	2,108	$180,285	1,709	$226,259	1,730	$250,384	2,007	$296,721
Canada	3,464	340,764	4,622	412,912	5,200	586,693	5,190	601,900
Mexico	427	46,865	351	45,325	406	50,344	261	32,111
Cuba	2,647	236,033	2,164	211,120	2,888	271,937	2,552	263,157
Argentina	47	5,289	56	6,390	104	11,803	178	25,618
Brazil	35	5,664	56	6,165	20	2,590	23	2,724
Chile	898	76,969	388	35,782	524	48,207	457	40,665
Japan	1,657	137,296	671	58,199	399	43,031	428	33,651
Australia	1,095	86,633	946	80,464	1,380	150,834	1,414	132,498
All other countries	1,276	138,810	1,744	166,714	1,666	190,876	1,791	184,316
Total	13,654	1,254,589	12,167	1,249,330	14,317	1,606,699	14,301	1,612,370

Exported to—	1915		1916		1917		1918	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Tons.		*Tons.*		*Tons.*		*Tons.*	
United Kingdom	2,247	$225,585	3,929	$402,934	4,205	$494,219	875	$146,897
Canada	3,021	361,834	3,054	379,942	4,309	739,755	4,002	708,944
Mexico	448	53,259	2,098	220,613	3,773	638,040	1,596	257,961
Cuba	3,143	301,856	5,321	568,990	7,320	1,117,523	4,777	890,573
Argentina	786	97,462	5,812	570,188	10,109	1,558,155	5,919	870,846
Brazil	340	29,734	2,091	205,603	6,727	1,196,091	5,181	872,320
Chile	513	47,658	2,192	187,056	3,754	585,349	2,221	388,369
Japan	352	34,189	2,718	285,437	1,450	208,087	4,876	816,946
Australia	2,114	177,801	3,105	303,091	8,525	1,050,142	6,521	1,084,481
All other countries	2,668	260,494	6,417	766,990	14,429	1,759,984	9,968	1,657,961
Total	15,632	1,589,872	36,737	3,790,844	64,601	9,922,436	45,036	7,695,298

[Calendar years.]

Exported to—	1918		1919		1920		1921	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Net tons.		*Net tons.*		*Net tons.*		*Net tons.*	
United Kingdom	373	$71,445	1,270	$333,560	1,119	$433,564	189	$85,141
Canada	3,389	601,181	3,195	744,272	2,894	868,513	1,616	393,643
Mexico	620	102,894	2,157	409,740	910	285,254	1,872	532,322
Cuba	5,293	1,046,570	5,189	1,190,407	7,499	2,268,732	2,209	674,428
Argentina	4,540	807,715	15,014	3,094,071	7,881	2,048,672	2,834	808,960
Brazil	4,782	860,959	6,882	1,473,297	3,796	1,198,101	660	244,825
Chile	2,600	450,139	2,392	596,061	776	236,302	114	40,743
China	1,968	394,622	4,496	865,444	3,337	940,676	1,642	541,360
British India	3,168	502,711	2,170	402,632	2,180	602,540	536	150,646
Japan	7,573	1,266,568	10,441	2,302,762	3,358	814,410	1,063	215,958
Australia	7,824	1,232,141	11,345	2,166,587	2,908	816,108	2,350	617,029
Philippine Islands	1,233	224,424	2,631	592,237	1,849	517,950	1,525	514,922
All other countries	6,247	1,149,571	9,509	1,997,985	9,001	2,745,642	3,482	1,075,248
Total	49,610	8,710,940	76,691	16,169,055	47,558	13,776,464	20,092	5,895,245

[1] Includes "printing paper, all other."

Exports from Canada.

PRINTING PAPER.

[Fiscal year ended Mar. 31.]

l to—	1915		1916		1917	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Short tons.		*Short tons.*		*Short tons.*	
.....	4,463	$180,598	5,222	$210,046	2,796	$137,410
ica.....	9,271	366,682	6,223	248,483	7,335	352,883
.....	19,401	745,946	23,498	866,315	26,410	1,166,617
.....	12,775	509,907	11,056	457,425	14,123	667,920
.....	338	13,221	4,356	160,354	3,232	129,788
.....	222	8,494	1,070	40,407	909	38,695
.....	46	1,693	180	6,439	298	15,449
.....	13	502	10	383		
.....	346	13,489	311	11,910	514	25,419
.....	990	37,460	444	16,506	652	28,535
.....					55	3,291
.....	65	2,441	1,222	45,267	218	11,585
.....	272	10,386	182	6,877	339	15,457
.....	314,477	12,126,982	407,701	15,839,780	481,621	20,973,548
.....	510	19,731	643	23,129	358	16,814
.....	1,413	57,770	1,086	40,971	1,400	65,600
.....	364,602	14,091,662	463,204	17,974,292	540,310	23,594,134

Exported to—	1918		1919	
	Quantity.	Value.	Quantity.	Value.
	Short tons.		*Short tons.*	
.....	1,708	$86,969	466	$38,484
ia.....	5,079	328,391	5,291	406,401
.....	31,222	1,835,207	32,155	2,081,911
.....	11,713	638,158	12,117	862,402
.....	2,185	112,871	10,788	781,587
.....	973	52,042	1,405	105,130
.....	461	19,785	668	29,927
.....	290	24,549	991	58,484
.....	117	7,421	200	16,717
.....	637	33,885	403	27,528
.....			1,476	100,676
.....			517	33,076
.....	93	5,086	87	6,361
.....	505	32,185	576	39,655
.....	549,075	30,741,564	594,003	36,031,358
.....	95	6,213	96	7,294
.....	1,940	54,021	1,188	91,030
.....	605,093	33,978,347	662,427	40,718,021

BOOK PAPER.[1]

[Fiscal year ended Mar. 31.]

Exported to—	1920		1921	
	Quantity.	Value.	Quantity.	Value.
	Short tons.		*Short tons.*	
.....	196	$29,697	343	$81,011
.....	289	51,725	294	70,748
.....	476	90,926	427	90,202
.....	945	164,526	869	248,725
.....	109	30,010	243	60,977
.....			85	21,985
.....	44	7,525	52	7,056
.....			17	3,369
.....	36	8,060	15	4,903
.....	20	3,761	48	7,369
.....			72	11,514
.....	264	50,100	795	171,904
.....	2,379	436,330	3,260	779,763

[1] ting paper" previous to 1920.

Exports from Canada—Continued.

NEWSPRINT PAPER.[1]

[Fiscal year ended Mar. 31.]

Exported to—	1920		1921	
	Quantity.	Value.	Quantity.	Value.
	Short tons.		*Short tons.*	
United Kingdom	23,369	$1,700,965	4,442	$444,130
British South Africa	4,226	359,581	7,782	1,013,408
Australia	32,173	2,288,994	37,120	4,256,850
New Zealand	9,581	683,374	12,950	1,567,350
Argentina	7,387	579,667	13,934	1,572,089
Brazil	1,050	88,803	2,601	293,657
Chile	943	83,140	440	53,986
China	574	40,311	.....	.....
Colombia	378	30,416	32	3,268
Cuba	1,575	127,752	1,164	140,774
France	2	161	.....	.....
Mexico	29	2,286	.....	.....
Peru	1,494	127,121	1,119	136,803
United States	627,667	46,809,178	668,842	68,792,519
Venezuela	205	18,736	139	15,258
All other countries	2,973	263,307	5,063	632,065
Total	713,626	53,203,792	755,628	78,922,137

[1] Included in "Printing paper" previous to 1920.

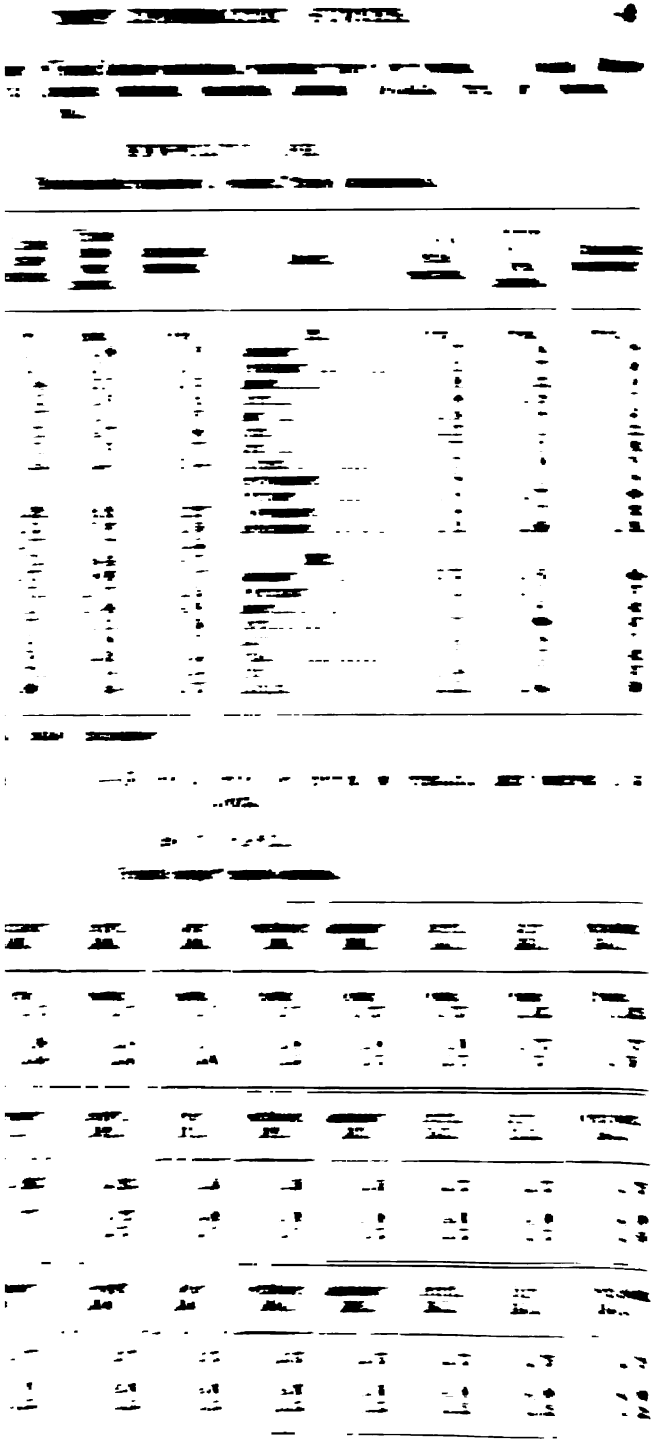
Domestic prices.—Weighted average wholesale contract price per pound of standard rolls in carload lots, f. o. b. mill.[1]

NEWSPRINT PAPER.

[From monthly reports of Federal Trade Commission.]

Month.	1913	1914	1915	1916	1917	1918	1919	1920	1921	1922
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
January	1.92	1.92	1.91	1.94	2.87	3.03	3.68	4.36	6.08	3.76
February	1.94	1.97	1.95	1.97	2.87	3.03	3.58	4.53	5.92	3.63
March	1.96	1.94	1.96	1.97	2.85	3.03	3.61	4.57	5.86	3.62
April	1.94	1.95	1.91	1.96	3.11	3.43	3.64	4.73	5.41	3.57
May	1.97	1.94	1.88	1.97	3.15	3.75	3.69	4.67	5.25	3.54
June	1.97	1.97	1.95	1.94	3.13	3.60	3.66	4.75	5.23	3.57
July	2.01	1.95	1.91	2.03	3.17	3.72	3.63	5.21	4.77	3.54
August	1.97	1.96	1.91	2.09	3.17	3.73	3.68	5.37	4.76	3.52
September	1.96	2.00	1.97	2.12	3.20	3.74	3.80	5.53	4.89	.....
October	1.99	1.95	1.90	2.18	3.18	3.74	3.84	5.79	4.19	.....
November	1.95	1.95	1.93	2.20	3.16	3.76	3.90	5.79	4.19	.....
December	1.94	1.95	1.93	2.30	3.17	3.74	4.11	5.97	4.10	.....

[1] These are the prices actually paid by publishers on all contract deliveries.



Mill prices (wholesale) f. o. b.—Minimum price per pound on available date nearest 15th of month—Continued.

BOOK PAPER—Continued.

Kind or grade.	January, 1916.	April, 1916.	July, 1916.	October, 1916.	January, 1917.	April, 1917.	July, 1917.	October, 1917.
	Cents.	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*	*Cents.*
Machine finish	3.75	5.75	6.75	7.75	8.50	8.25	8.25	6.60
Sized and supercalendered	4.00	7.00	7.50	8.00	9.00	8.50	8.50	6.875
Coated and enameled	5.25	6.75	7.00	9.00	9.50	9.00	8.50	8.00

Kind or grade.	January, 1918.	April, 1918.	July, 1918.	October, 1918.	January, 1919.	April, 1919.	July, 1919.	October, 1919.
Machine finish	5.75	6.75	8.25	9.00	9.00	7.50	7.50	8.25
Sized and supercalendered	6.50	7.25	8.50	9.50	9.50	8.00	8.00	8.50
Coated and enameled	7.50	8.00	9.50	11.00	10.00	9.50	9.50	10.50

Kind or grade.	January, 1920.	April, 1920.	July, 1920.	October, 1920.	January, 1921.	April, 1921.	July, 1921.	October, 1921.	January, 1922.	April, 1922.	July, 1922.	September, 1922.
Machine finish	10.00	11.00	14.00	14.00	10.00	8.50	7.50	6.50	6.45	6.00	6.00	(1)
Sized and supercalendered	10.50	11.00	14.00	15.00	11.00	9.50	7.75	6.70	6.70	6.70	7.50	(1)
Coated and enameled	10.75½	15.00	18.00	18.00	14.00	10.50	10.00	8.25	8.25	8.00	8.75	(1)

[1] Quotations withdrawn.

Rates of duty.

PRINTING PAPER.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1883....	386	Paper, sized or glued, suitable only for printing paper	20 per cent ad valorem.
	387	Printing paper, unsized, used for books and newspapers exclusively.	15 per cent ad valorem.
1890....	417	Printing paper, unsized, suitable only for books and newspapers.	Do.
	418	Printing paper, sized or glued, suitable only for books and newspapers.	20 per cent ad valorem.
1894....	306	Printing paper, unsized, sized or glued, suitable only for books and newspapers.	15 per cent ad valorem.
1897....	396	Printing paper, unsized, sized or glued, suitable for books and newspapers—	
		Valued at not above 2 cents per pound	$\frac{1}{10}$ cent per pound.
		Valued above 2 cents and not above 2½ cents per pound	$\frac{2}{10}$ cent per pound.
		Valued above 2½ cents per pound and not above 3 cents per pound.	$\frac{3}{10}$ cent per pound.
		Valued above 3 cents and not above 4 cents per pound	$\frac{4}{10}$ cent per pound.
		Valued above 4 cents and not above 5 cents per pound	$\frac{5}{10}$ cent per pound.
		Valued above 5 cents per pound	15 per cent ad valorem.
		Provided, That if any country or dependency shall impose an export duty upon pulp wood exported to the United States, there shall be imposed upon printing paper when imported from such country or dependency, an additional duty of one-tenth of 1 cent per pound for each dollar of export duty per cord so imposed, and proportionately for fractions of a dollar of such export duty.	

Rates of duty—Continued.

PRINTING PAPER—Continued.

Tariff classification or description.	Rate of duty.
ar (other than paper commercially known as hand-achine-handmade paper, japan paper, and imitation ir by whatever name known), unsized, sized, or able for the printing of books and newspapers, but ers or bindings, not specially provided for in this	
t not above 2¼ cents per pound	⅛ cent per pound.
bove 2¼ cents and not above 2½ cents per pound	⅛ cent per pound.
bove 2½ cents and not above 4 cents per pound	⅛ cent per pound.
bove 4 cents and not above 5 cents per pound	⅛ cent per pound.
bove 5 cents per pound	15 per cent ad valorem.
ever, That if any country, dependency, province, bdivision of government shall forbid or restrict in ie exportation of (whether by law, order, regulation, l relation, or otherwise, directly or indirectly) or y export duty, export license fee, or other export ny kind whatsoever (whether in the form of addi-ge or license fee or otherwise) upon printing paper, , or wood for use in the manufacture of wood pulp, be imposed upon printing paper when imported ctly or indirectly from such country, dependency, or other subdivision of government, an additional cent per pound when valued at 3 cents per pound, in addition thereto the amount of such export duty port charge imposed by such country, dependency, or other subdivision of government, upon printing d pulp, or wood for use in the manufacture of wood	
ciprocity act July 26, 1911, section 2: Pulp of wood lly ground; pulp of wood; chemical, bleached, or un-newsprint paper, and other paper, and paper board, ured from mechanical wood pulp or from chemical , or of which such pulp is the component material of , colored in the pulp, or not colored, and valued at than 4 cents per pound, not including printed or wall paper, being the products of Canada, when im-erefrom directly into the United States, shall be free of duty, on the condition precedent that no ex-export license fee, or other export charge of any kind r (whether in the form of additional charge or license rwise), or any prohibition or restriction in any way portation (whether by law, order, regulation, con-elation, or otherwise, directly or indirectly), shall imposed upon such paper, board, or wood pulp, or used in the manufacture of such paper, board, or p, or the wood pulp used in the manufacture of such oard.	
per (other than paper commercially known as hand-achine handmade paper, japan paper, and imitation per by whatever name known), unsized, sized, or table for the printing of books and newspapers, but vers or bindings, not specially provided for in this alued above 2½ cents per pound, 12 per centum ad va-*rovided, however*, That if any country, dependency, or other subdivision of government shall impose rt duty, export license fee, or other charge of any itsoever (whether in the form of additional charge fee or otherwise) upon printing paper, wood pulp, or use in the manufacture of wood pulp, there shall ed upon printing paper, valued above 2½ cents per hen imported either directly or indirectly from such dependency, province, or other subdivision of nt, an additional duty equal to the amount of the xport duty or other export charge imposed by such dependency, province, or other subdivision of govern-on either printing paper, or upon an amount of wood wood for use in the manufacture of wood pulp neces-anufacture such printing paper.	
aper (other than paper commercially known as hand-achine handmade paper, japan paper, and imitation per by whatever name known), unsized, sized, or itable for the printing of books and newspapers, but vers or bindings, not specially provided for in this alued at not above 2½ cents per pound, * * *. paragraphs of the act of 1913 were amended by the act mber 8, 1916, making the maximum nondutiable ents per pound instead of 2½ cents per pound, and the act of April 23, 1920, making the maximum ble value 8 cents per pound. See section on Tariff page 28.	Free.

COURT AND TREASURY DECISIONS.

PRINTING PAPER.

The term "handmade" as applied to paper by paragraph 401 of the act of 1897 was declared to be precise, explicit, specific, and controlling, and handmade paper weighing 10 pounds to the ream was declared to come within that paragraph rather than paragraph 396 for printing paper suitable for books. (American Trading Co. *v.* United States, 2 Ct. Cust. Appls., 237, of 1911.)

The word "suitable" in the phrase "suitable for the printing of books and newspapers" means actually, practically, and commercially fit. An exceptional use of onionskin paper for printing purposes does not make it a printing paper. (Kahlen *v.* United States, 2 Ct. Cust. Appls., 206, of 1911.)

Printed paper advertising cards, having the outline of a picture die cut into them after the manner of a stencil, were held properly classified under the proviso to paragraph 415 of the act of 1909 and not dutiable as printed matter under paragraph 416. The proviso to paragraph 415 was declared to have been prompted by the decision of the United States Circuit Court of Appeals for the Second Circuit in Hamilton *v.* United States (T. D. 29519, of 1909). (Knauth *v.* United States, 3 Ct. Cust. Appls., 183, of 1912.)

A protest claiming printing paper to come within paragraph 322 of the act of 1913 need not deny that it came from a country imposing an export duty upon it or upon the material used in its manufacture. (United States *v.* Murphy & Co., 7 Ct. Cust. Appls., 35, of 1916.)

Kraft paper is wrapping paper and not printing paper. Whether it is wrapping paper and not printing paper may be determined by trade testimony, but whether or not it is suitable for books is a question of fact not dependent upon any trade understanding. (Pritchard & Co. *v.* United States, 2 Ct. Cust. Appls., 247, of 1911.)

"Normandy vellum" was held not so imitative of the genuine japan as to be readily recognized as a substitute therefor, and is not a japan paper nor an imitation of japan paper, but is book printing paper. (Abstract 25317, T. D. 31498, of 1911.)

Countervailing duty was assessed under the act of 1913 upon printing paper imported from British Columbia, Finland, Portugal (T. D. 33786, of 1913), Labrador (T. D. 35741, of 1915), and Italy (T. D. 37204, of 1917). An affidavit of the seller or shipper stating the name of the country of manufacture and Province in which the wood was grown that was used in manufacturing the paper, may be accepted in lieu of a declaration showing the name of the manufacturer and the place of manufacture. (T. D. 34449, of 1914.)

Newsprint paper from Canada, valued in the Canadian market at 4 cents per pound, was held to be entitled to free entry as newsprint paper valued under 5 cents per pound by virtue of the provisions of paragraph 567 of the act of 1913, as amended by the act of 1916, and not dutiable under paragraph 322 of said act as amended by section 600 of the act of 1916. (Abstract 44126, of 1921.)

(See also Tariff Information Survey, Wood Pulp.)

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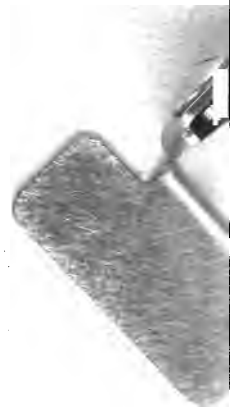

UNITED STATES TARIFF COMMISSION

WASHINGTON

FF INFORMATION SURVEYS

ON THE ARTICLES IN

ARAGRAPHS 315, 316, and 317 OF THE TARIFF ACT OF 1913

ND RELATED ARTICLES IN OTHER PARAGRAPHS

SILK WEARING APPAREL AND SILK SMALL WARES

graph 315:
ndkerchiefs

graph 316:
bons
all Wares

Paragraph 317:
Silk Wearing Apparel
Silk Knit Wearing Apparel

REVISED EDITION

WASHINGTON
GOVERNMENT PRINTING OFFICE
1922

UNITED STATES TARIFF COMMISSION.

Office: Old Land Office, 8th and E Streets NW.
Washington, D. C.

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PREFACE.

This is one of a series of Tariff Information Surveys prepared by the ited States Tariff Commission and transmitted to the Committee Ways and Means. The series covers all of the articles and com-dities provided for in the tariff act of October 3, 1913, and others specifically provided for. It is arranged in the numerical order paragraphs of that act.

In some cases two or more paragraphs have been combined in one nphlet. In doing this, industrial relationship of the articles has n followed, when possible. In those instances where a paragraph been treated under a preceding paragraph of the tariff act, erence is made to this fact at the point where the paragraph pears in numerical order. Where one grade of an article is dutiable l another grade of the same article is on the free list, the article discussed under the dutiable paragraph which appears first in merical order in the tariff act. In certain instances articles of se industrial relationship and which occur in separate paragraphs the tariff act have been combined under one paragraph for con-nience of discussion. Reference is made to this fact at the point ere the commodities would naturally occur in numerical order.

The first pamphlet in the series is an "Introduction and index" ich contains:

. An introductory chapter discussing the scope of the series and general method of treatment.

. An alphabetical index of the articles provided for in the tariff of 1913, showing the paragraph of the act in which the article is vided for and, if discussed under a different paragraph, the number uch paragraph.

. A list of the pamphlets in the series, showing the paragraphs and cles included in each pamphlet.

Thus, by use of this "Introduction and index," the exact location the discussion relating to a given article or commodity can be ertained.

n the preparation of this report the Tariff Commission had the vices of Evelina P. Kean, of the Commission staff, and of others.

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WEARING APPAREL AND SILK SMALL WARES.

TARIFF ACT OF OCTOBER 3, 1913.

Schedule L, providing for silk wearing apparel and silk
s:

kerchiefs or mufflers composed wholly or in chief value of silk, finished
l; if cut, not hemmed or hemmed only, 40 per centum ad valorem; if
or imitation hemstitched, or revered, or having drawn threads, but
ered in any manner with an initial letter, monogram, or otherwise, 50
ad valorem.
ons, bandings, including hatbands, belts, beltings, bindings, all of the
t exceeding twelve inches in width and if with fast edges, bone casings,
s, cords and tassels, garters, suspenders, tubings, and webs and webbings;
going made of silk or of which silk or silk and india rubber are the com-
erials of chief value, if not embroidered in any manner, and not specially
r in this section, 45 per centum ad valorem.
hing, ready-made, and articles of wearing apparel of every description,
knit goods, made up or manufactured in whole or in part by the tailor,
or manufacturer; all the foregoing composed of silk or of which silk or
dia rubber are the component materials of chief value, not specially pro-
n this section, 50 per centum ad valorem.

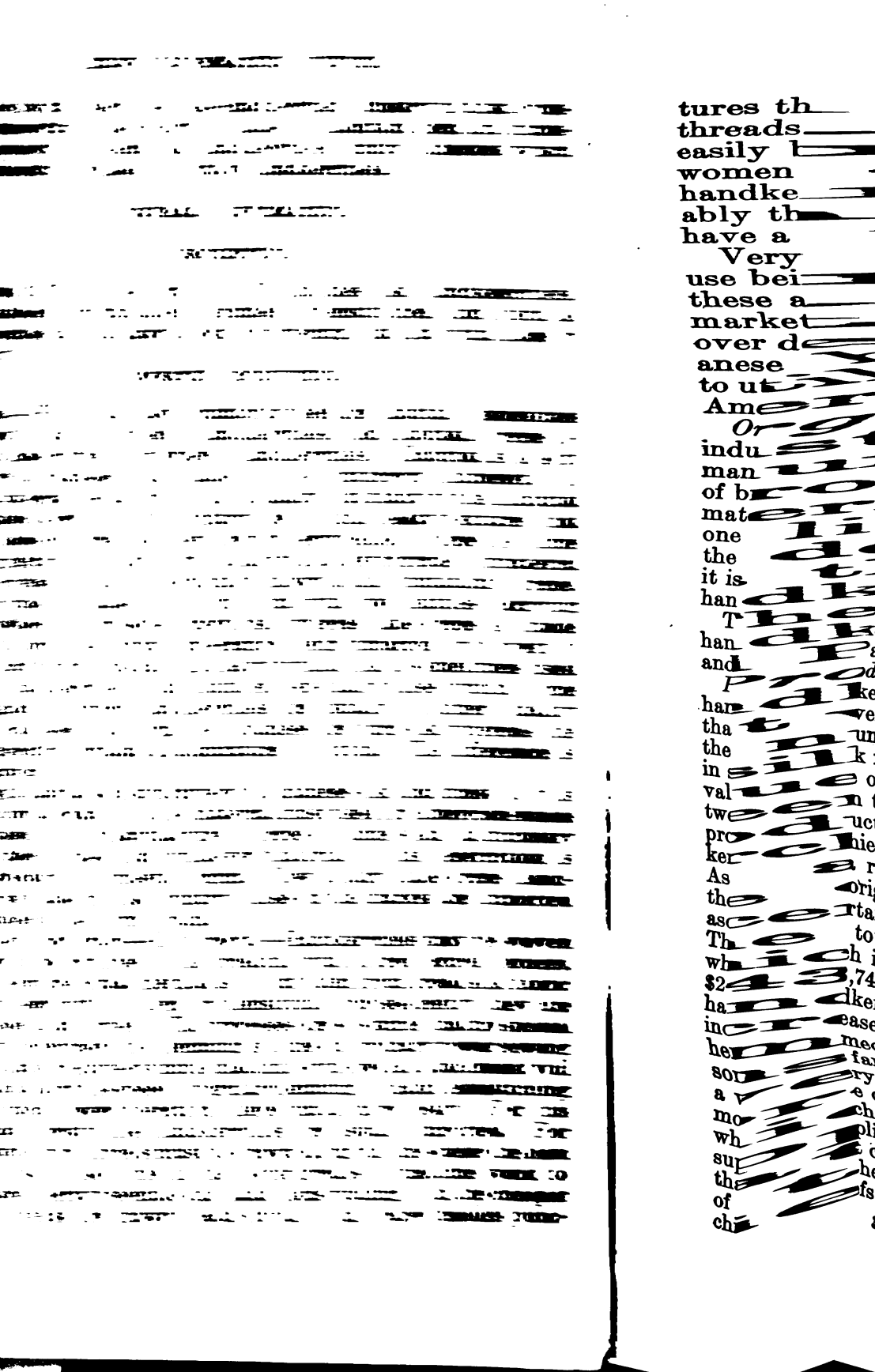
SILK HANDKERCHIEFS.

SUMMARY.

manufacture of silk handkerchiefs has never been of very
nportance in the United States. It is not a separate indus-
t connected with the manufacture of broad silks or the manu-
of other kinds of handkerchiefs. For this reason the chief
are Passaic and Paterson, N. J., where handkerchiefs and
re made.

demand for silk handkerchiefs is so variable from year to
hat there is little to induce the investment of capital in a plant
eir manufacture.

orts represent the larger part of the domestic consumption,
is much less than that of other kinds of handkerchiefs. The
ge imports of silk handkerchiefs for the 10 years 1911–1920
equaled in value the imports of cotton handkerchiefs, but
omestic production of cotton handkerchiefs in 1914 was about
00,000, while the production of silk handkerchiefs was prob-
less than $1,000,000. Silk handkerchiefs are the only kind
hich the imports of the plain article average more than imports
ie ornamented. This is probably because such a large propor-
of the silk handkerchiefs are printed. These are usually a
p habutai handkerchief, which comes in large quantities from
an at an average price of less than $1 per dozen. France, Switzer-
l, and Great Britain send small amounts of high-priced goods.



›ric giving a line of perforations which simulate drawn
ıese machines are not difficult to operate and may
ın by semiskilled labor. The operatives are usually
rls. Quantities of plain hemmed and machine hemstitched
ıfs are among those imported from all countries and prob-
›rk has been done on American-made machines which
› market in all parts of the world.

plain white silk handkerchiefs are in demand, the greatest
s an accessory to sports attire. Some are in solid colors;
sually crêpe de chines, but the silk handkerchiefs on the
for the most part printed either with borders or all-
s, in one color or in a combination of colors. The Jap-
kerchiefs are hand-printed with blocks, making it possible
great variety of designs and of colors in one design. The
ınd European printing is done by machine.

tion and geographical distribution.—The silk handkerchief
not an entity in this country. It is correlated with the
re of cotton and linen handkerchiefs and the manufacture
lks. For this reason the fluctuation in demand does not
affect the manufacturer, because he can quickly shift from
› another; if the demand for silk handkerchiefs is slack,
ıd for cotton and linen proportionately heightens. Thus
he competition offered by the importation of cheap silk
iefs is with the whole domestic handkerchief industry.

ıs manufacturing silk handkerchiefs are in or near the
ief and silk manufacturing centers, particularly at Passaic
›on, N. J.

›on and consumption.—No production statistics of silk
ıiefs are available, but observation of the trade reveals
few domestic silk handkerchiefs are sold in comparison with
›r imported. Only the silk handkerchiefs which were made
lls were recorded in census reports. These amounted to a
›267,910 in 1909 and $76,477 in 1914. The difference be-
figures does not necessarily mean a decrease in domestic
ıı, because several manufacturers of cotton and linen hand-
also make silk handkerchiefs, which would not be included.
›, the product is not classified according to material on
.al returns to the Census Bureau, so it is impossible to
the total value of silk handkerchiefs made in this country.
. production is evidently less than the amount imported,
1914 was $370,955 and in 1920 was $1,947,796; of these,
in 1914 and $1,869,851 in 1920 were plain. The use of silk
hiefs, as attested by import for consumption statistics, has
several fold since 1914, and the increase is largely in the
or hemstitched group. From opinions gathered from per-
liar with the trade, the bulk of these importations consists of
ıeap grade of women's handkerchiefs printed in colors and
›n plain hemmed or hemstitched. These come from Japan
ı the two years for which imports are shown by countries,
over 98 per cent of the total quantity; the values from
ıtry show an average of less than $1 per dozen; hence some
would be imported at much lower prices. Such handker-
e found in quantities in stores specializing on cheap mer-

chandise, as the "10-cent" stores. Department stores and shops catering to high-class trade report a falling off in demand for women's silk handkerchiefs to such an extent that sales during the last several years have been negligible, reduced practically to crêpe de chine sport goods, which are usually a feature of the holiday trade. The use of men's silk sport handkerchiefs, on the other hand, has shown some increase, and as they retail at $1, $1.50 each, and higher, a small quantity imported in proportion to the women's handkerchiefs would add greatly to the total value. Demand also varies considerably according to locality. It is said that silk handkerchiefs are far more popular in the West than in the East, especially the large dark-colored ones which men wear as mufflers.

Exports.—The quantities of silk handkerchiefs exported from the United States are small and were not recorded in our trade figures until January 1, 1922. Small amounts are shown in foreign import statistics as coming from this country. Canada, for instance, received annually an average of about $8,000 worth of silk handkerchiefs from the United States in the five years, 1917–1921, and moderate quantities are sent to the Argentine. However, the United States is not really a factor in the world trade in silk handkerchiefs, about 90 per cent of which probably originates in Japan.

FOREIGN PRODUCTION.

The production of silk handkerchiefs in foreign countries can not be ascertained with accuracy, but from the statistics of countries which give this item separately it is apparent that Japanese exports represent a large proportion of the international trade. Argentina was an important market for silk handkerchiefs in pre-war days, imports amounting to from one to two million dollars annually. France and Japan together supplied 80 per cent of the total. Imports from France dwindled to a negligible amount during the war, and although those from Japan decreased they represented about 75 per cent of the total. The United Kingdom contributed somewhat to this trade but in a much smaller proportion than France and Japan. With the diminution of imports from France and Japan there was some increase in those from the United Kingdom. Canadian imports since 1913 have ranged from $51,630 in 1916 to $153,575 in 1921, the larger part of which was supplied by Japan in increasing proportions until 1921 when about one-third of the total came from Great Britain. The countries from which silk handkerchiefs are obtained, with the exception of Japan, do not separately state silk handkerchiefs in their export statistics. Japanese reports show large shipments to the European countries which are in turn exporters. This is particularly true of Great Britain which, next to Argentina, was the largest Japanese export market in pre-war days. From this it would seem that British shipments represent reexports rather than British manufactures. Considerable quantities were sent to France but not sufficient to account for silk handkerchiefs received by other countries from France. Italy and Germany also took large amounts from Japan. Hence it is probable that most of the silk handkerchiefs in international trade originate in Japan except perhaps some of special quality which are made in France. Total exports of silk handker-

[1] See *addenda*, p. 58.

Japan are between two and three million dollars
l by the time these handkerchiefs reach the countries of
sumption this value will have been increased several
cent by profits and transportation costs.

IMPORTS.

angement of classifications under various tariff acts
different grouping of the statistics so that a table of any
analogous throughout can not be given for a period of
ing over these changes. When studying the accompany-
imports for consumption the following points must be
nd: (1) The figures from 1891 to the first part of 1898,
e for all classes of silk handkerchiefs; (2) the figures from
part of 1898 to the first part of 1914, inclusive, represent
chiefs not hemmed or hemmed only; (3) the figures from
part of 1914 to 1920, inclusive, represent silk handkerchiefs
l, hemmed only, or hemstitched; i. e., the statistics were
the inclusion of hemstitched handkerchiefs which pre-
e reported with those embroidered or lace trimmed.
son Table 2, showing total imports of silk handkerchiefs
re period, is presented. This shows that the average for
s was $663,926 with an average annual duty of $366,703
rage equivalent ad valorem rate of 55.23 per cent. The
e of total imports recorded for any one year from 1891 to
290,630 in 1913 and the highest $1,947,817 in 1920. The
orts before the present tariff were $1,243,297 and $1,384,-
2 and 1893 respectively, and though imports fluctuated
y during the succeeding years they did not again reach
until 1917. In that year imports were $1,146,766, of
10,106 represented the value of plain handkerchiefs and
e value of those ornamented with lace or embroidery.
operation of the acts of 1897 and 1909 hemstitched hand-
ere grouped with ornamented, and this was a much larger
n than that of handkerchiefs not hemmed or hemmed
e the group containing plain hemstitched silk handker-
always been the larger, it is evident that the bulk of the
ve been handkerchiefs of this class. Silk handkerchiefs
nature of luxuries and the fluctuation in imports probably
change in fad or fashion rather than the effects of the
ie fluctuations do not correspond to the rising and lowering
tes. The domestic industry has probably never been of
portance to limit competition from abroad.
s of imports by countries were first recorded for the six
uly to December 31, 1918. During that period Japan
28,371 dozen, valued at $770,023, 93 per cent of the total
f silk handkerchiefs imported; and in the calendar year
7,294 dozen, valued at $1,529,127, 98 per cent of the total
The average unit value of the Japanese goods was 93 cents
1918 and 90 cents a dozen in 1919 as compared with $5 and
other countries. Imports from Switzerland showed the
nit value, averaging $33 per dozen in 1918 and in 1919,
tities were very small, probably consisting of elaborately
mented articles.

TARIFF HISTORY.

Silk handkerchiefs were not specially mentioned in the act of 1883, but were dutiable at 50 per cent ad valorem as manufactures of silk. No differences in rates were provided for silk handkerchiefs, whether plain hemstitched or ornamented with lace or embroidery, in the acts of 1890 and 1894, which levied flat ad valorem rates of 60 per cent and 50 per cent, respectively. Under the act of 1897 silk handkerchiefs not hemmed or hemmed only were dutiable at the same rate as the material of which they were composed, with a minimum proviso of 50 per cent; hemstitched and ornamented handkerchiefs were dutiable at 10 per cent ad valorem in addition to the rates on the cloth, with a minimum proviso of 60 per cent. As is usual when minimum rates are established, the bulk of the imports came in under that provision. In the act of 1909 the rates according to the structure of the cloth were abolished and only the flat ad valorem rates retained. A third classification of handkerchiefs ornamented with lace or embroidery made on a Lever or Gothrough machine, dutiable at 70 per cent, was included in this act in a paragraph providing for all articles so ornamented. There are three classifications under the act of 1913: Silk handkerchiefs if cut, not hemmed, or hemmed only are dutiable at 40 per cent; silk handkerchiefs hemstitched or imitation hemstitched, at 50 per cent; and silk handkerchiefs embroidered or lace trimmed at 60 per cent.

Apparently the tariff has had little effect upon imports. Under the 60 per cent rate of the act of 1890 imports were much heavier than under the 50 per cent rate of the act of 1894. The compound rates effective under the act of 1897 averaged somewhat greater than the 60 per cent rate of the act of 1890. Imports decreased under this act, but it was probably because of lessened demand, as there was no corresponding increase under the lower rates of the act of 1909. Even though the rates of the act of 1913 were considerably below those of the act of 1909, there was no appreciable difference in the amount imported until 1917, when total imports suddenly jumped to $1,146,766 from $498,949 in the preceding year.

COMPETITIVE CONDITIONS.

Japanese imports have practically monopolized the field.

Conditions in that country are particularly favorable to the manufacture of silk handkerchiefs, as habutai, the chief material used, is essentially a Japanese silk made only in small amounts elsewhere, and other silks used are produced equally well in Japan. The process of converting the cloth into handkerchiefs can as easily be done in Japan as in the United States, and probably at much less cost because of the cheaper labor. It is a machine operation so simple that superior American efficiency would hardly counterbalance lower wages, and the machines, while possibly not made in Japan, can be obtained here or in Europe. The unit values of the silk handkerchiefs imported from Japan are much below those from other countries. Japanese handkerchiefs are plain hemmed, hemstitched, or the very cheap grade of embroidered goods.

ɔe of any particular advantages of the American manu-robably the reason why this has remained a subsidiary ustry.

STATISTICAL MATERAL.

LE 1.—*Silk handkerchiefs and mufflers—Imports by countries.*

[Calendar years.]

—	1918 [1]		1919		1920		1921	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
eira	*Dozen.*		*Dozen.*		*Dozen.*		*Dozen.*	
.....	2,131	$4,261	.....	.....	.....	.....	1	$6
.....	199	3,738	532	$4,084	4,009	$37,555	3,741	46,460
.....	185	6,112	956	32,469	21,632	134,082	5,098	139,633
.....	778	4,593	9,013	62,911	10,837	153,815	9,181	80,244
.....	67	360	630	2,135	859	3,571	2,196	3,689
.....	1,387	7,160	3,276	17,764	5,320	26,879	7,271	28,117
.....	828,371	770,023	1,697,294	1,529,127	1,375,372	1,615,373	645,417	667,535
.....	.....	.....	167	2,415	220	370	.....	.....
.....	.....	.....	.....	.....	.....	.....	3,688	3,434
.....	833,138	796,489	1,711,912	1,651,159	1,418,862	1,974,565	676,593	969,058

. 31 not previously recorded.

otal silk handkerchiefs and mufflers [1]*—Imports for consumption—Revenue.*

ear.	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
				Per cent.
.....	50 per cent ad valorem	$109,112	$54,556	50.00
.....	60 per cent ad valorem	448,190	268,914	60.00
.....	....do	1,243,297	745,978	60.00
.....	....do	1,384,514	830,708	60.00
.....	....do	751,045	450,627	60.00
.....	....do	88,038	52,823	60.00
.....	50 per cent ad valorem	732,462	366,231	50.00
.....	....do	785,298	419,054	50.00
.....	....do	761,386	380,693	50.00
.....	....do	36,317	18,159	50.00
.....	Compound	263,388	180,919	68.69
.....	....do	428,474	278,714	65.05
.....	....do	397,041	248,177	62.51
.....	....do	583,617	358,865	61.48
.....	....do	712,668	440,229	61.77
.....	....do	574,323	357,459	62.24
.....	....do	376,108	228,564	60.77
.....	....do	512,613	312,014	60.87
.....	....do	410,983	260,218	63.31
.....	....do	417,710	249,677	59.77
.....	....do	320,461	193,370	60.34
.....	....do	374,085	236,922	63.33
.....	....do	41,147	26,423	64.22
.....	50, 60, and 70 per cent ad valorem	359,994	212,576	59.05
.....	....do	379,093	224,014	59.09
.....	....do	343,061	204,378	59.57
.....	....do	290,630	172,893	59.49
.....	....do	99,988	59,581	59.59
.....	40, 50, and 60 per cent ad valorem	270,967	134,912	59.78
.....	....do	304,165	150,671	49.52
.....	....do	498,949	238,603	40.61
.....	....do	1,146,766	535,760	46.72
.....	....do	1,165,234	546,322	46.88
.....	....do	1,358,850	635,663	46.78
.....	....do	1,947,817	926,118	47.55
l average.....		663,926	366,703	55.23
.....	40, 50, and 60 per cent ad valorem	1,330,869	600,433	45.12

nufflers after 1898. These totals include articles embroidered or ornamented with lace.

TABLE 3.—*Silk handkerchiefs and mufflers, not embroidered or ornamented with lace—Imports for consumption—Revenue.*

Fiscal year.	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
				Per cent.
1898 [1]	Compound	$17,742	$13,892	78.30
1899	do	20,744	14,238	68.63
1900	do	19,304	12,975	67.22
1901	do	35,578	21,627	60.79
1902	do	22,261	15,902	71.42
1903	do	33,348	20,217	60.62
1904	do	26,136	15,109	57.74
1905	do	34,190	20,249	59.22
1906	do	36,084	20,121	55.76
1907	do	43,929	24,081	54.82
1908	do	22,657	13,032	57.52
1909	do	16,499	9,639	58.42
1910	do	3,237	2,037	62.93
1910	50 per cent ad valorem	46,510	23,255	50.00
1911	do	35,223	17,611	50.00
1912	do	14,807	7,403	50.00
1913	do	14,873	7,436	50.00
1914	do	4,167	2,084	50.00
1914 [2]	40 and 50 per cent ad valorem	239,575	116,077	48.47
1915	do	286,356	139,985	48.88
1916	do	480,192	227,352	47.35
1917	do	1,110,106	513,765	46.27
1918	do	1,123,819	521,619	46.42
1919	do	1,329,849	618,462	46.51
1920	do	1,869,851	869,483	46.50
1921	do	1,285,102	572,973	44.59

[1] Hemstitched or imitation hemstitched handkerchiefs not included under acts of 1897 and 1909 because not given separately from embroidered handkerchiefs.
[2] Hemstitched or imitation hemstitched handkerchiefs included under act of 1913.

Silk handkerchiefs or mufflers, not embroidered—Rates of duty.

Act of—	Par.	Tariff classification or description.	Rates of duty.
1890	413	* * * handkerchiefs, * * * composed of silk, or of which silk is the component material of chief value, not specially provided for in this act,	60 per cent ad valorem.
1894	301	* * * handkerchiefs, * * * composed of silk, or of which silk is the component material of chief value, * * *	50 per cent ad valorem.
1897	388	Handkerchiefs or mufflers [1] composed wholly or in part of silk, whether in the piece or otherwise, finished or unfinished, if not hemmed or hemmed only, shall pay the same rate of duty as is imposed on goods in the piece of the same description, weight, and condition as provided for in this schedule; but such handkerchiefs or mufflers shall not pay a less rate of duty than . . .	50 per cent ad valorem minimum, 10 per cent ad valorem additional.
		if such handkerchiefs or mufflers are hemstitched or imitation hemstitched, or revered or have drawn threads, * * * they shall pay a duty of 10 per centum ad valorem in addition to the duty hereinbefore prescribed, and in no case less than—	
1909	400	Handkerchiefs or mufflers composed wholly or in chief value of silk, finished or unfinished, if cut, not hemmed or hemmed only, shall pay—	50 per cent ad valorem.
		if such handkerchiefs or mufflers are hemstitched or imitation hemstitched, or revered, or have drawn threads, * * *	60 per cent ad valorem.
1913	315	Handkerchiefs or mufflers composed wholly or in chief value of silk, finished or unfinished; if cut, not hemmed or hemmed only,	40 per cent ad valorem.
		if hemstitched or imitation hemstitched, or revered, or having drawn threads, but not embroidered in any manner with an initial letter, monogram, or otherwise,	50 per cent ad valorem.

[1] As cloth, par. 387.

SILK RIBBONS.

SUMMARY.

ng the various branches of the silk industry, ribbons are third
ıe of output, broad silks being first and knit goods second.
ɔ sewing silk, it is the longest-established branch in this coun-
'he production of silk ribbons in 1919 equaled $66,053,000,
was over three and one-half times the production 20 years
In these figures are included a small amount of pile ribbons.
rson, N. J., is the principal center of silk ribbon manufacture
United States. The production of New Jersey and Pennsyl-
ɔombined amounted to over 80 per cent of the total in 1914,
ɔduction in other States declined from 1909 to 1914.
ral factors tend to concentrate the ribbon industry in particular
es. The first of these is nearness to labor skilled in silk weav-
'his is more essential than in the broad silk industry because
nand is more variable and production less certain, hence it is
ifficult to hold together the labor organization of a ribbon mill.
ɔuch mills are located in definite silk centers, the workers shift
ıd forth from one branch of the industry to another. A second
ɔration affecting the location of ribbon mills is that they are
small and not equipped to do their own throwing. There is
dvantage in being near the throwing plants, since transpor-
ınd insurance charges on silk are very high.
rican mills manufacture ribbons of standard quality and width.
ɔonstitute the bulk of the trade. Few fancy ribbons are made
ɔountry. Conditions of manufacture tend to preserve this line
vage between the domestic and the foreign product. The
automatic high-speed multiple-shuttle ribbon loom, producing
imum quantities, has been found well adapted to American
ls of manufacture.
gn manufacturers have equally effective machines, but the
ost of foreign labor makes possible a larger introduction of the
lement and permits a much broader field for variation in
and weave. Imports, therefore, consist mainly of novelty
or those elaborately figured, which can not be made profitably
ɔountry. Foreign manufacturers do not compete in this mar-
ordinary standard grades. France and Switzerland have
been the principal countries from which ribbons are imported.
ıy has contributed quantities of cheaper ribbons which make
ght part of the total value. For the 30-year period (1891–1920)
ıual average of silk ribbon imports was $1,382,247. This
very small ratio to domestic production in any census year.
s for 1919 were the lowest in the history of the industry while
ic production was the highest, hence a comparison in that year
ıot represent the true relation. Imports for 1914, however,
ɔing to $2,146,987, were much above the average and a remark-
ɔrease over the previous four years. In that year the value of
ɔons imported equaled 6 per cent of the value of the domestic
ɔ. Imports for 1921 were valued at $862,727.
American ribbons are exported each year, but normally
ɔ not represent a significant part of the world's trade. During
few years exports have been considerably larger than imports.

The American manufacturer holds the domestic market on all but fancy goods and novelties. Imports supplement the domestic product rather than compete with it. This will probably remain the case as long as conditions of manufacture here and abroad hold their present relation. Should European labor costs approach the American, the foreign manufacturer would undoubtedly turn to American high-speed, quantity-production methods, which are not unknown, but considered less desirable while it is possible to produce distinctive articles.

TABLE 4.—*Silk ribbons—Summary table.*

Year.	Domestic production.	Imports for consumption.	Amount of duty.	Ratio of imports to production.	Actual or equivalent ad valorem rate.
				Per cent.	*Per cent.*
1910	[1] $32,744,873.00	$934,429.15	$467,214.59	2.85	50.00
1911		687,984.00	343,992.00		50.00
1912		601,131.34	300,565.67		50.00
1913		596,896.00	298,448.00		50.00
1914	38,201,293.00	2,146,988.07	996,489.15	5.62	46.41
1915		583,187.00	262,434.15		45.00
1916		230,756.00	103,840.20		45.00
1917		197,533.00	88,889.85		45.00
1918		105,483.00	47,467.35		45.00
1919	66,186,609.00	74,778.00	33,650.00	.001	45.00
1920		526,255.00	236,814.75		45.00
1921		862,727.00	388,227.00		45.00

[1] Figures for 1909. Figures for domestic production include velvet and plush ribbons. Figures for imports do not. Velvet and plush ribbons, however, are but a small fraction of domestic ribbon production.

GENERAL INFORMATION.

DESCRIPTION.

Ribbons are narrow woven fabrics with fast edges. They are rarely woven in widths greater than 8 inches; goods over 12 inches are not considered ribbons and are not made on a ribbon loom. While imitation or "cut" ribbons are made by cutting into narrow strips a cloth, usually specially woven for the purpose, real ribbons are always woven separately, and thus have fast selvages. They are generally made wholly or in part of silk in many types, such as taffeta, gros grain, single and double faced satin, two-toned satin with a different color on each face, and fancy figured ribbons.

The measurement of the width of ribbon is explained as follows in an earlier report of the Tariff Commission:[2]

"Silk ribbon quotations are based on the ligne (of width) per bolt of 10 yards. The ligne is one-twelfth of the old French pouce (2.707 cm.), and is therefore equivalent to 0.0888 of an English inch. Ribbons are also numbered, from No. 1 (baby ribbon) up to No. 100 or over. This numbering system originally was based on the thickness of an old English penny, which was nearly the size of our silver dollar, but the system has been corrupted. Different manufacturers use the same numbers for different widths, and it has become the practice to use higher numbers on fine than on cheaper ribbons of the same width. Above No. 22, or 30 lignes, the number is now only an approximate indication of the real width, and is frequently little more than a fancy name."

[2] "Silk and manufactures of silk," Tariff Information Series No. 3, p. 28.

h 316 of the 1913 tariff act makes special provision for
it excepts the following: (1) Ribbons not wholly or in
of silk; (2) goods over 12 inches in width; and (3) rib-
have been embroidered. Velvet and plush ribbons are
ically provided for in the tariff paragraph dealing with
, and ribbons in chief value of metal threads, provided for
graph 150, are also removed from the application of para-
[3] The following discussion relates only to ribbons included
ph 316.

DOMESTIC PRODUCTION.

nce of the industry.—The ribbon industry ranks third
lk products. Broad silks are first and silk knit goods
The total value of silk products, including silk knit goods,
l to $923,873,000 in 1919. In 1914, the United States pro-
8,000,000 worth of silk ribbons, a little over one-fourth as
the value of the domestic production of broad woven silk
this was increased to over $66,000,000 in 1919, but the pro-
:o broad silks was less.
ials.—"All-silk" ribbons are generally woven from "thrown
yarn made by twisting together the strands of raw silk reeled
e cocoon. A cheaper silk yarn known as "spun silk" which
by dressing and spinning silk waste is sometimes used for
:" ribbons either alone or in connection with thrown silk.
:r made from thrown or spun silk, ribbons in chief value of
:y contain, in either warp or filling, cotton, artificial silk, or
extile fiber. The United States is the greatest thrown-silk
er in the world, adequately supplying the ribbon industry,
though European prices are probably slightly lower than those
ling in the United States, the difference is offset by the tariff
5 per cent), so that the imported silk affords no price advantage
consumer. The divergence between spun-silk prices on the
ontinents is of greater importance since the European price is
y less than the American by at least the full extent of the duty
per cent. Because of the duty, sizes up to and including 60/2
sh count in silk of ordinary grade are more profitably procured
: United States; finer sizes and special qualities, abroad. Arti-
silk is frequently used in connection with real silk. It is ordi-
r somewhat more costly here than in Europe, but the enormous
rapid development of this industry and the increasing uses of
iber have made the demand and supply so variable that prices
: fluctuated too materially to maintain a constant relation in
rent countries. A very large amount of the ribbons made in
silk mills is mixed-silk goods requiring considerable quantities
otton yarn, usually of fine size and high grade, gassed, combed,
mercerized. Domestic cotton yarns are generally used, but
ual imports from England for use in the manufacture of ribbons

[3] The special sorts of ribbons not within the application of par. 316 are provided for in the tariff as fol-
: Cotton ribbons, par. 262 (cotton small wares); velvet and plush ribbons, par. 314 (pile fabrics);
:" ribbons and goods over 12 inches, par. 318 (broad goods); embroidered ribbons, par. 358 (laces, em-
deries, and trimmings); ribbons in chief value of tinsel wire or metal threads, par. 150 (gold, silver,
ther metal tinsel wire, lame, bullions, threads and manufactures). Although certain ribbons are also
ned "trimmings," it has been held that if the goods are properly designated ribbons, they should be
sified as such regardless of whether they could also be properly designated as trimmings.

amount to about 50,000 pounds of a few special counts which are mainly combed and gassed mule-spun Egyptian cotton in the gray, though some of the lower counts are made of American cotton.[4]

The situation as to dyestuffs is uncertain, owning to the recent development of the American dyestuff industry. The American ribbon producer at present probably pays somewhat more than his European competitor for dyestuffs. The cost of dyestuffs, however, is a minor part of the total cost of silk ribbons.

Equipment.—The looms and auxiliary machinery required for the weaving of ribbons are extensively made in the United States.[5] Except for an occasional specialty, therefore, domestic ribbon weavers use domestic equipment exclusively.

Method of production.—The weaving of ribbons is somewhat different from that of broad silks inasmuch as the ribbon loom has so many different "spaces" in which separate ribbons are woven simultaneously. The narrow loom is not completely automatic, as the bobbins which carry the filling threads must be replenished by the operative. While the fly shuttle is used on the broad loom, the shuttles of a multiple ribbon loom are positively controlled. A reciprocating rack and series of pinions impart the movement coincidentally to all the shuttles across the width of the ribbon loom. These looms may be very varied in the details of construction, but for the most part they are plain, narrow, cam looms which may operate as many as 60 spaces at one time. With the invention of various automatic adjustments and other improvements in construction the tendency has been to build the looms longer and longer, but some manufacturers maintain that an operative can tend two shorter looms more advantageously than one long one. Of course, in districts where labor is well organized union rules will probably affect the kind of loom in use, especially as the unions are opposed to a worker operating more than one loom. Frequently there are two tiers of spaces to a loom, but this has been found by some not to produce the quality of goods obtainable on a loom with a single row of spaces.

There are two general types of the narrow or ribbon loom, the straight shuttle and the circular shuttle. These terms refer to the courses traveled during weaving, the straight shuttle moving from side to side over its appointed space in a straight line, while the circular shuttle moves in an arc. The advantage of this curved motion is that the track of one shuttle will cross the track of another during their movement through the shed, allowing the pieces of fabric to be more closely spaced than is possible on a straight shuttle loom. As more space per web woven is required on a straight shuttle loom the capacity is more limited, seldom exceeding 36 spaces, and the cost of production relatively greater. A single head loom which has been perfected in Switzerland is said to operate at a fabulously high speed, but its use is confined to very narrow fabrics, 1½ inches or under.[6]

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[4] "Cotton yarn," Tariff Information Series No. 12, p. 92.

[5] In 1838 power ribbon looms were first designed and made in the United States, simultaneously with the introduction of the first power ribbon looms in Europe. The high-speed ribbon loom was invented in the United States in 1889. (Census 1900, Pt. III, p. 208.)

[6] The Textile Manufacturer (Manchester, England), Aug. 15, 1921, p. 239; also the Textile Recorder (Manchester, England), Aug. 15, 1921, p. 64.

ilk weaving, while the winding of the weft yarn on cops which
› the shuttles is a relatively simple machine process, the winding
warp and the fitting of the hundreds or thousands of warp threads
he attachments of the loom are complicated processes which
se of the fineness and fragility of the threads require trained
rs with dexterous hands. These processes can not be done
ıtomatic machinery; the few machines available assist the
tive rather than perform the work for him, each machine re-
ıg constant attention and direction. Once the warp is pre-
, the weaving is a rapid and relatively automatic process. The
of the operative is essentially to fill up exhausted bobbins and
omptly repair breakages which are indicated by an automatic
motion. In silk weaving the work is more difficult than in the
of cotton or other fiber weaving, because of the delicacy of the
and the usual compactness of the fabric, from 250 to 500 threads
ı inch being a normal silk warp. This large number of fine
ds leads to frequent breakages, which delay and make difficult
weaving of the fabric as well as the preliminary processes of
ing and warping. Practically every operation in the production
k ribbons requires comparatively skilled labor.

the manufacture of ribbons, the difficulty and slowness of the
: and the amount of highly skilled labor required for each unit
roduction are greatly increased by any of the following five
›rs:

) The use of especially fine silk, which makes breakages frequent.
) The use of low-grade silk, which also breaks frequently.
) The insertion of metal threads.
) The production of ribbons of complicated weaves, which makes
preparation of the warp slower and more exacting work, makes
ıkages in weaving more difficult to detect and to repair, and
ssitates the use of looms with Jacquard attachments, which
rate more slowly than other looms.[7]
) The weaving of small amounts of a single pattern. The
ller the amount made on a single pattern the greater the designing
; per yard; also the greater the per yard cost of preparing the
p for weaving.

abor.—Of the workers in a ribbon factory women are in the ma-
ty as the work is not heavy. It is too difficult, however, to make
employment of children profitable. Outside of the silk weaving
ters such as Paterson, N. J., the particular type of skilled labor
uired in almost every process of ribbon weaving is difficult to
ure and usually has to be trained.

n Europe ribbon workers are readily available. Previous to the
r, silk workers' wages were considerably less in Europe than in the
ited States, and even less in Japan than in Europe. The normal
rking day in Europe was about 10 hours, in the Orient over 12,
d in the United States 9 hours, sometimes with a half holiday on
turday. Working conditions, however, especially hours, have been
lically affected by the war and are still in a state of flux.

Because of this disadvantage in regard to skilled labor, the domestic
›bon weaver uses machinery, both in weaving and in preparatory
ocesses, more extensively than it is used abroad. In Europe

[7] Complicated weaves, also, can rarely be sold, except in small amounts.

there still remains a considerable amount of hand weaving. These differences affect to some extent the character of the output. The domestic manufacturer produces primarily those fabrics which have a relatively low labor cost compared with the total cost. Thus ribbons of standard weave produced on a large scale are the mainstay of the domestic industry. Silk of fine size is rarely used, but the thread is almost always of fine quality because the machines are run at higher speed and there are fewer breakages than if low-grade material were used.

Organization.—The ribbon industry is fully developed. It was the first branch of the silk industry, after the sewing thread industry, to secure a foothold in the United States. Its large growth began shortly after the Civil War, under the shelter of the high post-bellum tariffs, and was carried forward by the rapid development of ribbon machinery in the last decades of the past century. Its expansion has also been promoted by the development of the broad goods industry, which began in the last quarter of the century, for there have thus arisen wider markets for materials and equipment and for skilled labor.

The typical ribbon firm confines its operations to the preparation of the warp and weft and to the weaving of ribbons. Most ribbon producers have the raw silk thrown on commission, purchase spun silk or cotton yarn ready made, and have yarn or finished ribbons dyed on commission. Ribbon mill equipment is therefore restricted to the loom and its contributory machines, and the minimum capital investment required for efficient production is not large. As a result ribbon weaving firms are generally of medium size. A few large broad goods firms also produce ribbons. These firms generally "throw" their own raw silk, sometimes even spin their own spun silk yarn from silk waste, and do their own dyeing and finishing. A few ribbon concerns also do their own throwing and others have interests in throwing mills. The large number of small firms and the efficiency of ribbon production on a comparatively small scale make the possibility of the control of the industry by a few dominant concerns exceedingly remote.

Demand.—Silk goods, more than goods of any other textile, are subject to great changes of demand, both with the rise and fall of general prosperity and with changes in fashion. The demand for ribbons is even more variable than the demand for silk goods generally. When other silk goods are having a year of great popularity, ribbons may be so out of style that few ribbon looms are in operation.[8] It is typical of the industry that large numbers of looms are frequently idle. Broad-silk weavers can readily become ribbon weavers, and with changes in ribbon styles there is a considerable ebb and flow of workers between the ribbon industry and the broad goods industry. Because of this changing demand it is difficult for ribbon mills to keep a large labor force over a series of years. Proximity to a skilled labor market is therefore more essential for ribbons than for broad goods, and as a result the industry is more concentrated at Paterson than is the broad goods industry.

[8] Thus in 1915 ribbons were the one branch of the silk industry in which there was almost no demand. See section on ribbons in the annual report of the Silk Association of America, 1916.

lthough ribbons are thus more subject to changes in style than
d goods, they are more standardized. The bulk of domestic
luction consists of goods so standardized that the product is
ble of complete description in terms of a standard color, weave,
width.

ographical distribution.—Paterson, N. J., is the center of the
ibbon industry. In 1919 46 per cent of all domestic ribbons
produced in New Jersey, 35 per cent in Pennsylvania, and 15
ent in New York. The ratio of these three principal ribbon-
cing States remained about the same from the census of 1914
it of 1919, with a slight gain for New York. A comparison of
ous census years seemed to indicate that Pennsylvania, with
eaper coal and labor, was rapidly gaining upon New Jersey,
iat *is not* borne out by the latest figures. The proportion of
se in active ribbon looms, from 1909 to 1914, was 36 per cent
nsylvania as against 5 per cent in New Jersey. In 1919
was a general reduction of 20 per cent in active ribbon looms.
crease in New Jersey was 15 per cent and in Pennsylvania 17
it.

estic production and consumption.[9]—The United States pro-
in 1919 approximately $66,000,000 worth of silk ribbon, in-
; a small proportion of velvet and plush ribbons. From 1899
) the production of ribbons in each fifth (census) year was
',179, $21,890,604, $32,744,873, $38,201,293, and $66,186,609,[10]
ively. The total increase was 258 per cent. At each census
om 1899 to 1919, the number of active ribbon looms were 7,000,
0,000, 11,000, and 9,000, respectively, and the total increase for
od was 55 per cent. The increase in production is principally
increased prices and to increased productive capacity of
c ribbon looms through the higher speed of operation and
the greater number of ribbons woven on a single loom.[11]
these figures can safely be accepted as displaying a steady
id growth of the industry, they can not be taken as an exact
on of the rate of growth in each of the several five-year periods,
census figures indicate the value of production in each fifth
ly, and the wide variation in the production of ribbons
r to year caused by the variation in the domestic demand
he production of any one year an unreliable index of the
production for the five-year period in which it occurs. The
iation from year to year in the amount of imports, in addi-
he variation in the amount of domestic production, makes
rison of domestic production with domestic consumption
nsus years of little significance. Roughly, from 1899 to
ratio of domestic production to domestic consumption of
is, including velvet and plush ribbons, increased from 85
o 93 per cent. Imports in 1919 were too far below the aver-
istify such comparison. As the imports of velvet and
ons are about equal to the imports of other ribbons, while
stic production of velvet and plush is but a small fraction

cal tables, see p. 6, infra. Ribbon-production figures are given by the census for value
nd plush ribbons are always included in the census with other ribbons.
ires; all-silk ribbons to the value of $52,047,330 and silk mixed to the value of $14,139,279.
ve looms of constantly greater speed and size been made from year to year but owing to the
the double-tier loom and the curved-shuttle loom, looms of the same size have constantly
actly arranged so as to carry more ribbons.

of the domestic production of all ribbons, the ratio of the value of domestic production to domestic consumption of ribbons other than velvet and plush ribbons is considerably greater than the ratios given above.

Domestic exports.—The American silk-ribbon industry has gained a market Canada and Latin America, mainly because of quick deliveries to the retail trade or because the ribbons were not obtainable from Europe. A considerable increase in exports occurred during the war, largely owing to curtailment of European competition. Exports were not recorded prior to January, 1922. For the first quarter of 1922 they amounted in value to $175,488, which was 70 per cent more than imports for the same period.[12] In the absence of official American export statistics in previous years, Canadian import figures are a more or less reliable barometer of our export trade. These show imports of "ribbons of all kinds and materials," under "other silk products," valued at $646,424, $1,481,545, $1,595,053, and $868,270 as coming from the United States in the fiscal years ended March 31, 1918, 1919, 1920, and 1921, respectively. The drop in 1921 was a falling off in American trade and not a general decrease in Canadian imports, which were $3,882,360 as compared with $2,844,386 in the previous year. There was some rise in the values received from France and the United Kingdom, but the greatest competitor to American trade was Switzerland, whose 1921 trade with Canada amounted to $1,812,962, over three times that of 1920 and more than twice the imports from the United States in 1921. Imports into Canada from 1910 to 1914 showed a gradual yearly increase from both the United States and Switzerland, in the first case from $106,108 to $160,505 and in the second from $287,567 to $512,504. Ribbon manufacturers consider it improbable that a large export trade will be maintained, because this trade calls only for goods from low-grade silk, such as are not advantageously produced in the United States, and because the European manufacturer caters to the export trade, while the domestic manufacturer offers only such products as he is making for domestic consumption. The fact, however, that ribbons were exported even before the war suggests that the domestic producer is able to manufacture those ribbons most advantageously made in the United States at a cost not far distant from that of his European competitor. Domestic exports in the last few years have been considerably larger than imports.

FOREIGN PRODUCTION.

In Europe, the greater availability and lower wages of skilled labor have allowed the survival of hand production. The same causes also permit the manufacture of elaborate Jacquard designs—often metal-thread designs—in small quantities to a pattern. Silk ribbons are produced most extensively in France, Germany, and Switzerland. In each of these countries the production is largely concentrated in a single ribbon-producing center: St. Etienne in France, Crefeld in Germany, and Basel in Switzerland.

The output of the French ribbon industry, as indicated by export statistics, has increased considerably since 1913. In 1913 exports of silk and mixed-silk ribbons other than velvet amounted to about

[12] See *Addenda*, p. 58.

000,000,[13] and in 1920 to about $36,000,000.[14] The exportation of vet ribbons showed very little increase. According to report [15] the ench production for 1921 is below the average and the Swiss indus- is proving a strong competitor. Reviewing Swiss export sta- tics from 1885 to 1920,[16] the industry seems rather to have declined an expanded. Considering quantity, the year of greatest exports s 1888; since 1895 there has been a very marked decrease, only ghtly bettered during the first three war years. There was a cided slump in 1917–18. The next two years show a recovery ualing 1914 exports in quantity.

The manufacture of ribbons in Switzerland is not entirely a tory industry, some of the work being done in the weavers' homes hand looms. For this reason there is more variety of product, d more elaborate designs can be worked out in the weaving.

It is not advisable to compare the trade figures of one country th those of another, because quantities, if recorded, are in different its, and exchange has been too variable to convert values to a mmon basis.

IMPORTS.

Imports for consumption.—For the 30-year period, 1891 to 1920, e value of imports of silk ribbons averaged annually $1,382,247, th an average duty of $680.713. The average annual value for the st decade amounted to $1,531,203; for the second, to $2,040,439; id for the third, to $575,099. Because of fluctuations in demand, pendent upon changing fashions, imports from year to year show nilar variation, so that the amount imported in any one year is of tle significance. Between the fiscal years 1901 and 1903, to cite extreme instance, the annual import of ribbons increased from ,913,000 to $4,230,000, and dropped again to $1,673,000 in 1904, rise and fall in four years of over $2,000,000. For several years bor conditions in the Paterson silk industry had been very much sturbed, and doubtless a shortage of domestic production accounted, part, for increased imports. Between the fiscal years 1913 and 915 a similar sudden wave of importation occurred. In 1912 and 913 strikes had depleted the stocks of the domestic industry. In 913 ribbons came into fashion, especially the elaborate styles most ommonly imported. The rapidly rising demand reached an ab- ormal height in 1914, the annual report of the Silk Association of merica saying: "It is unlikely that ever in the history of the Ameri- an ribbon business have so many looms been operating as during he first nine months of 1914."

The fiscal year 1915 began July 1, 1913, when American ribbon ocks were low and when the vogue for narrow was beginning o manifest itself. Imports of narrow, which in the fiscal year 913 were $596,000, rose tenfold, to $2,146,000. In 1915 the emand for ribbons changed. Narrow production was reported o be the one branch of the silk industry in which there was lmost no demand. Prices fell to a low point. Influenced by he high demand of the first nine months of 1914, importers had

[13] From official French statistics, francs converted at par.
[14] From report of Consul C. Corrigan, Lyon, France, Mar. 29, 1921, converted at 14.50 francs to the dollar.
[15] The Textile Mercury, July 2, 1921, p. 24, and Commerce Reports, May 29, 1922, p. 565.
[16] Compte Rendu des Travaux de la Chambre de Commerce de Lyon, 1918; figures for 1919 and 1920 from wiss official trade reports.

placed large orders. As a result, in the fiscal year 1915, which included six months of the calendar year 1914, a much greater quantity was brought into the country than the market could absorb. Evidence of this appears in the excess of general imports (imports by countries) over imports for consumption which indicates that stocks were retained in bonded warehouses. The value so withheld from consumption, however, would not be as great as the differences in these figures would seem to indicate, as certain varieties of ribbons, notably those in chief value of metal threads and those ornamented with embroidery, would be included under general imports, but not under imports for consumption, where they would fall under general classifications of metal-thread and embroidered-silk articles, respectively. This is seen by a comparison over a series of years. From 1914 to 1920, inclusive, the totals given under general imports of silk ribbons have amounted to $6,464,733, whereas imports for consumption during the same years amounted to $3,866,979, a difference of $2,597,754. As so large a proportion of the amount consumed would hardly be allowed to accumulate in warehouses, and as reexports amount to practically nothing, some of this difference may be accounted for by ribbons of the two classes referred to above. Ribbons in chief value of metal threads are dutiable under paragraph 150 and embroidered ribbons under paragraph 358 of the act of 1913. Since 1915 imports for consumption have, despite increased prices, remained low in value. The highest was in 1921, when they were valued at $862,727. A comparison of the amount of the annual imports of ribbons with the condition of the domestic ribbon market, as reported in the annual reports of the Silk Association of America, indicates that in normal years, just as in these years of extraordinary demand, the rise and fall in the amount of imports accords closely with the rise and fall in the domestic demand. On the whole, however, although the domestic demand shows a tendency to rise, the value of imports displays a tendency to decrease.

Imports by countries.—In 1914, 59 per cent of all imports were supplied by France, 36 per cent by Switzerland, and 3 per cent by Germany; in 1920 the percentages were 78, 13, and 2.8, respectively; in 1921, 64 per cent came from France, 20 per cent from Switzerland, and 11 per cent from Germany. While the proportion of imports supplied by each of the several foreign countries in 1914 was roughly typical of the decade preceding the war, the portion of the imports supplied by France had shown a tendency to increase and those supplied by Germany to decrease. The greatly increased proportion received from Germany in 1921 is difficult to explain except on a basis of depreciated exchange. This theory is substantiated by the low unit value of the German goods, 6 cents per yard as compared with 11 cents for the French and 14 cents for the Swiss.[17]

Nature of imports.—Imports of silk ribbons are mainly of those required in quantities so small that domestic mills consider it unprofitable to make the frequent changes necessary to hold this

[17] In 1918 the proportion of the total imports supplied by Switzerland greatly declined. This drop was explained by the United States consul in Switzerland as being due to an artificial inflation of ribbon prices in Switzerland through an agreement of the merchants in Switzerland regulating prices of sales to England. Though they were willing to make special prices for sale to America, "market value" on which duty is computed was so inflated that the present ad valorem rate proved prohibitive. (Report of United States consul at Basel, June 10, 1918.)

They represent largely extreme novelties, including gold ther metallic effects, as well as the complicated multicolored ard designs. The importation of staple articles practically d years ago. Ribbons made in very small amounts, and s of very fancy weave, or with metallic threads, as has been usly explained, require unusually large amounts of hand by exceptionally skilled workmen, and are, therefore, not vely made in the United States. In years of abnormal l, such as 1903 and 1914, ribbon imports probably contain rable amounts of staple ribbons comparable with the usual domestic manufacture, imported only to supply a temporary e. Thus, imports of ribbons are, generally speaking, supple- y to domestic production, and do not compete with it.

TARIFF HISTORY.

ous to 1909, no specific provision for silk ribbons was made tariff. There was much litigation concerning the dutiable ation of silk ribbons, which in one line of cases involving unds to importers were held to come within the tariff desig- or trimmings, but later, under the act of 1897, they were l as manufactures of silk not specially provided for when mercially known as trimmings. In 1909 ribbons were lly provided for under about the same description as is he act of 1913, and made subject to a duty of 50 per cent. 13 they have paid a duty of 45 per cent. In the fiscal 4, the year in which the tariff act of 1913 went into effect, of ribbons, as has been previously explained, increased to several times that of the preceding year. However, sub- o the fiscal year 1914, imports have been exceptionally small, e first three months of the fiscal year 1914, when the former still in force and when it was known that the lower duty come operative in the last nine months of the year, more e imported and entered for consumption than had been im- d entered for consumption in the preceding year. Owing acts and to the sharp wave of extraordinary demand pre- 1913 and 1914, which has been previously discussed, the ort of 1914 can not be considered a result of the lower 913.

COMPETITIVE CONDITIONS.

estic producer faces no great competitive disadvantage in procuring machinery, or the cotton yarn and thrown silk most ribbons are made, but must pay more for the spun or ribbons of cheaper grades. As a whole, he suffers dvantage in procuring materials or equipment. The for the most part well standardized. The method of pro- ows extensive use of machinery and is well suited to domes- ons. The industry, however, requires comparatively r in almost every process, and the domestic producer has e disadvantage in the smaller supply and higher price of r in the United States as compared with Europe.

petitive position of the domestic and Euporean producer moreover, in regard to the production of different sorts

of ribbons. In producing ribbons of standard weave from high-grade materials, the competitive position of the domestic producer is strongest, for these ribbons permit of the most machine manipulation, involve the employment of the least highly skilled labor, and represent the lowest labor cost per unit of output. Such ribbons are extensively made in the United States and practically none are imported. Even before the war there were some exports of this type of goods.

The competitive position of the domestic producer is less strong in regard to the production of ribbons made from low-grade raw silk, even of standard weave, for the machinery can not be run at such high speed, and, as has been explained, the labor cost per unit of production is greatly increased when low-grade silk is used. Therefore it does not pay the domestic producer in the same proportion to manufacture ribbons from low-grade raw material.

Finally, in the production of ribbons demanded in small quantities, of ribbons of complicated weave, of ribbons made with tinsel or metal thread, and of ribbons made on hand looms, the competitive position of the domestic producer is weakest. The production of such ribbons requires not only an exceedingly large labor cost in proportion to total cost, but the employment of very highly skilled labor. They are not extensively produced in America, and the most extreme types could not be profitably produced here without a much higher degree of protection. They form almost the entire import, which is therefore not competitive with domestic production.

The ribbon industry is a branch of the silk industry which is of long standing and which is fully developed. The duties levied in recent years have prevented importation, except of the sorts of ribbons which domestic production is not well suited to handle, and of ribbons needed to supply a shortage of domestic production in years of swollen domestic demand. In normal years domestic production supplies the entire domestic consumption of ribbons advantageously made in America. The growth of the domestic industry is therefore mainly dependent upon the further growth of the domestic demand and the extension of the small export trade which has developed, rather than upon elimination of European competition.

TARIFF CONSIDERATIONS.

The variety of ribbons is so great, and the ribbon import so largely composed of specialties which can not be adequately covered by specific duties, unless those duties be based upon an unduly minute and technical classification, that specific duties on ribbons have generally been thought impracticable. Any specific duty would need to be reinforced by an ad valorem minimum rate clause to provide for articles with special factors of value which a specific duty could not take into account, and as few ribbons are imported except specialties, most of the import would consist of goods that would come within that clause. On this account, although the tariff act of 1909 imposed specific duties on most manufactures of silk, ribbons were made subject to an ad valorem duty.[18]

[18] In a communication to the Tariff Commission (May, 1919) one of the leading men in the silk industry said: "An ad valorem duty was placed on ribbons in the tariff of 1909 when almost all other duties were specific, because of the difficulty of preparing a specific classification which would take into account the varieties in the 'ligne' (width) of ribbons as well as the variations in quality, fineness, weave, and other characteristics. An ad valorem duty was also chosen because it was found difficult to get ribbon producers to come to an agreement as to what would be satisfactory."

[redacted]

TABLE 7.—*Silk ribbons—Imports for consumption—Revenue.*

al year..	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
				Per cent.
	50 per cent ad valorem	$1,793,330	$896,765	50.00
	do	1,714,964	857,482	50.00
	do	2,203,096	1,101,848	50.00
	do	1,003,728	501,864	50.00
	do	319,985	159,992	50.00
	45 per cent ad valorem	804,758	362,141	45.00
	do	1,129,317	508,193	45.00
	do	979,102	440,596	45.00
	do	72,836	32,776	45.00
	50 per cent ad valorem	1,758,369	879,185	50.00
	do	1,714,214	857,107	50.00
	do	1,817,534	908,767	50.00
	do	1,913,999	956,799	50.00
	do	2,994,673	1,497,336	50.00
	do	4,230,062	2,115,031	50.00
	do	1,673,258	836,629	50.00
	do	1,880,072	940,036	50.00
	do	2,009,884	1,004,942	50.00
	do	1,841,323	920,661	50.00
	do	1,300,621	650,310	50.00
	do	1,626,470	813,235	50.00
	do	934,429	467,214	50.00
	do	687,984	343,992	50.00
	do	601,131	300,565	50.00
	do	596,896	298,448	50.00
	do	606,889	303,444	50.00
	45 per cent ad valorem	1,540,098	693,044	45.00
	do	583,187	262,434	45.00
	do	230,756	103,840	45.00
	do	197,533	88,889	45.00
	do	105,483	47,467	45.00
	do	74,778	33,650	45.00
	do	526,255	236,815	45.00
l average		1,382,247	680,713	49.25
	45 per cent ad valorem	862,727	388,227	45.00

Silk ribbons—Rates of duty.

r.	Tariff classification or description.	Rates of duty.
1	Ribbons, * * * not exceeding 12 inches in width, and if with fast edges, * * * composed wholly or in chief value of silk, * * * if not embroidered in any manner, by hand or machinery,	50 per centum ad valorem.
6	Ribbons, * * * not exceeding 12 inches in width and if with fast edges, * * * made of silk or of which silk or * * * are the component materials of chief value, if not embroidered in any manner, and not specially provided for in this section,	45 per centum ad valorem.

COURT AND TREASURY DECISIONS.

hat-trimmings cases arising under the tariff act of 1883, the whether ribbons were trimmings was decided as a question pon the evidence in each case. Under the act of 1897, which, act of 1883, contained no specific provision for silk ribbons, bons were held to come within the provision for manufactures (Gartner *v.* United States, 131 Fed. 574.) In that case some ibbons were and some were not trimmings; those used for gs were required to be further fashioned for such use. In a se it was held that such articles did not become trimmings

y were so fashioned as to be applied to the articles to be . (Robinson *v.* United States, 121 Fed. 204.) As the in the Gartner case were not commercially known as trim- he Treasury Department, on advice of the Attorney General, ed in the decision of the circuit court. (T. D. 25375.)
ns composed chiefly of silk, but in part of cotton, were held · classified as manufactures of silk under that act rather than ons, * * * of cotton * * * whether composed in india rubber or otherwise, * * *," the word "otherwise" terpreted to have the meaning of "not," and not as relating · materials than india rubber. (Gartner *v.* United States, 158 19, affirming 154 Fed. 957.)

SILK SMALL WARES.

SUMMARY.

manufacture of plain small wares, narrow fabrics under 12 in width, when braids are not considered, represents but a part of the silk industry. The conditions of manufacture are ied that it is impossible to separate it entirely from other es of silk production.
most important item imported is hatbands. Domestic produc- 1914 was $607,204 and imports amounted to $484,369. These rom Germany, and in normal times there was considerable com- n between the foreign and the domestic article. Only small ts of other narrow goods are imported. The greatest value was 80 in 1921. The articles included in this paragraph are mainly es suited to standardization and quantity production.

GENERAL INFORMATION.

DESCRIPTION.

term "small wares," while not used in the tariff act, is fre- ly applied to narrow fabrics not over 12 inches in width and scellaneous articles made immediately from the silk thread, as cords and tassels. Most narrow fabrics are woven on the n loom, but many of the products of the braiding machine are r in use and in general appearance. Some of these fall under emized provisions of paragraph 316 (act of 1913) as the most ic description; braids in general are dutiable at a higher rate · paragraph 358.
the articles included in paragraph 316, *banding* comprises the part of the imports. It is a narrow fabric, either woven or ed, used as hat and cap bands, as borders or finishing on dresses, or securing bundles of cigars. Elastic banding is frequently silk ed and as such would come under this paragraph. It is used for rs and in the manufacture of corsets and various kinds of sup- and braces. The market is largely supplied by the domestic try.
nding is used to secure the edges of cloth or of a garment to pre- fraying or raveling or to give additional strength. One of the familiar forms of binding is a thin taffeta ribbon, about three-

eighths of an inch wide, sold in bolts of from 8 to 10 yards each for seam finishing. This comes in all staple colors and is carried in quantities by retail stores, as well as being sold to the garment trade. A braidlike binding is frequently used as a finish for the edges of tailored garments, and there are special bindings for carpets and for blankets.

Belting for separate belts of narrow silk fabric is little used at the present time, but inner belting to which skirts, or the waists and skirts of dresses, are attached to insure the proper adjustment of fullness and "hang" is considered practically indispensable. Much of this is cotton, but silk belting in varying widths from 2 to 4 inches, either reinforced with boning or made of a heavy grosgrain, is manufactured in large quantities for use in garments of the better quality.

Bone casings are narrow tubular fabrics with which corset steels and "boning" used in dressmaking are covered.

Braces, suspenders, and garters are articles produced from narrow fabric, usually made elastic by weaving india-rubber threads in the warp. The manufacture of elastic banding, webbing, and articles made therefrom is a very important branch of the small-wares industry, but imports are slight. Former tariff acts had a special provision for gorings which were the elastic bandings used in the sides of shoes. The vogue for this style of shoe passed and the term gorings became practically obsolete.

Tubings, including tubular elastics, are fabrics woven or braided in tubular form.

Webbing is the term commonly applied to narrow fabrics, whether woven or braided, which are intended for strength or to bear weight, such as a belt or a surcingle or suspender webbing. Suspender webbing sometimes has the button-holes automatically woven into it.

Cords are made by braiding or by twisting together three or more threads; the larger the number of threads the more nearly does the cross section of the resulting cord approach a circle.

Tassels, frequently used as a finish for the ends of cords, are made by securing a bundle of threads or small cords at one end in such a way that it may be used for a pendent ornament.

Narrow fabrics embroidered in any manner are excluded from the provisions of paragraph 316 and fall under paragraph 358 of the act of 1913. Articles made by cutting or splitting goods woven on wide looms are dutiable under the provisions for broad silks.

DOMESTIC PRODUCTION.

Materials.—The United States is the greatest raw silk market in the world and has the largest silk throwing industry; hence silk yarn is as easily obtainable here as in other countries, and with little price variation. For some small wares cotton is used in conjunction with silk, and special purposes require yarns which are not normally made in the United States. Hatbands, which are one of the most important articles included under small wares, are usually made with a weft of cotton yarn. In a report on cotton yarn made by the Tariff Commission in 1920,[19] it is stated that whereas some hatbands are made entirely of silk, the staple article of large consumption is a mixed

[19] Tariff Information Series No. 12.

de with a silk warp and cotton filling. Domestic cotton
e not found suitable for hatband manufacture, and English
this purpose were imported in increasing proportions. Dur-
eriod of high prices, American spinners, having a greater
profit, were able to expend more effort to meet the require-
hatband manufacturers. Cotton yarn for use as filling in
must be combed or else extra well carded, preferably of long
tton, and spun and twisted (doubled) very evenly, so that
ven with a silk warp the product will be as free as possible
aps. Very little twist is given these yarns and they are
' or polished to lay the fuzz. English yarn has usually been
l in the gray, but some German-dyed yarn has been used be-
the superiority of the colors. Cotton yarn imported for use
anufacture of hatbands amounted to 180,178 pounds in 1914,
14,702 pounds in 1918.

ıch detail is available concerning other branches of the silk
ares industry, nor is the collection of such data warranted for
pose of this survey, as other items in this paragraph are not
to the same foreign competition.

ods of production—Equipment.—The articles enumerated in this
ıph are for the most part products of the ribbon loom[20] usually
aple weave, as they are intended more for purposes of utility
; trimmings, which are specially provided for under paragraph
ıttempts have been made to produce elastic webbing in wide
slashed to width by stationary knives in the loom, or by cal-
ıg a sheet of elastic between two pieces of finely woven cloth
tting into strips, but neither of these products met with much
Practically all elastic webbing is now woven with finished
ɔn narrow looms.

many is the most important manufacturer of textile machinery
ıall ware weaving and formerly narrow looms were imported
that country and from England, but domestic manufacturers
now developed a type of loom peculiarly adapted to manufac-
; conditions in the United States. In order to counter-balance
eater labor costs, speed of operation is a very important ele-
in American production. To this end narrow looms have been
which are often speeded as high as 180 picks per minute.
perate at this speed, with so many pieces of web, a heavy
of loom is required to make satisfactory goods, free from thick
thin places resulting from irregularities of speed or variable
ıentum.

ıe speed of the looms is not so significant a factor in the German
stry; hence it is feasible to operate much lighter machinery,
ramework of which is, as a rule, of wood and the looms in conse-
ıce much cheaper than the American. It is possible, therefore,
ı German factory to be equipped at less cost than an American,
, because of the smaller and slower looms, to produce a greater
ety of articles.

he labor unions are particularly well organized in branches of the
ll wares industry in certain localities in the United States and
trol the output per operative, allowing one person to run only one
ɔon loom or two garment-label looms.

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[20] See Ribbons, p. 12.

Organization.—There is practically no uniformity in organization of the silk small wares industry; some articles, such as hatbands, are made in ribbon factories, in broad silk mills, or in establishments devoted solely to the manufacture of hatbands; some concerns make a great variety of articles, and as the machinery may be readily diverted from cotton to silk, both cotton and silk small wares are sometimes, though rarely, made in the same factory.

Geographical distribution.—There are no distinctive centers of this industry in the United States as there are in Europe, though a considerable proportion of the hatband production is in Paterson, N. J. In general the largest part of the output comes from New York, Pennsylvania, New Jersey, Massachusetts, and Connecticut.

Domestic production.—The production of articles embraced in paragraph 316 can not be reckoned with any degree of accuracy because the census classifications do not coincide with tariff descriptions. Under the designation "Braids and bindings," which comprise some of the articles included in the small wares paragraph, and probably in larger proportion some which are not, the census figures show a value of $3,073,648 in 1914, and $12,837,000[21] in 1919. The unclassified products made by the silk manufacturing industry proper reported under the general heading "All other" are shown in some detail for 1914. These include several items of small wares, labels valued at $971,789, hatbands at $607,204, and fishlines at $177,150. Suspenders, garters, and elastic webbing from which these are made are given as a separate industry with a total production of $24,432,753 in 1914 and $58,884,000 in 1919, but no distinction was made as to the materials of which the articles were composed. Massachusetts and New York led in value of output.

Exports.—No export statistics are recorded prior to January 1922; for the first quarter of 1922 they amounted in value to $43,317, which was greater than imports for the same period.[22]

FOREIGN PRODUCTION.

The countries of foreign production can only be judged from trade statistics, a general survey of which points to the fact that prior to the war, at least, Germany was the most important foreign manufacturer of silk small wares, supplying about 90 per cent of the imports into the United States. This trade was largely in hatbands, which industry thrives at Barmen, Elberfeld, Crefeld, and the surrounding district. An American manufacturer of hatbands, who also imported the German product, stated that the Germans had certain manufacturing advantages, for even with slower machines German labor costs were no greater than the American, whereas this very factor enabled them to save material costs by using a looser twist and lighter weight silk yarn than would be possible on the high-speed American machines.[23] A correspondingly greater labor cost would be involved on the part of the American manufacturer by any attempt to save materials through slackening production. The manufacturer quoted also stated that silk dyeing at that time was about as expensive but more satisfactory in Germany than in the United States. As small

[21] Census figures.
[22] See *Addenda*, p. 58.
[23] Tariff hearings, Senate Finance Committee, 1913, vol. 2, p. 1370.

› frequently made in conjunction with ribbons, both France
tzerland figure to some extent in the export trade. St.
in France is especially known as a center of the hatband

IMPORTS.

ering the 30-year period, 1892–1920, during which four
tariff acts were in operation, the largest imports of silk
res amounted to $1,221,528 in 1907. Imports under the act
vere less than under the act of 1890, although the duty had
ıced from 50 to 45 per cent. The act of 1897 broadened the
tion so that the larger amounts shown during those years do
:ate that imports actually increased. There was in fact
.y a steady decline from 1907 to 1913 in which year imports
l to $489,830. As the largest part of these reduced impor-
ame from Germany they dwindled still more after 1914. A
rival of the German trade was apparent by a rise in the
:or 1920 and 1921. In the latter year they amounted to

large part of the imports, usually from 80 to 90 per cent, are
;s, including hatbands" that separate statistics for this item
ı recorded since 1903. The heaviest imports were $1,042,923
From 1910 to 1914 there was considerable decrease in the
imports due presumably to the growth of the domestic
The value of imports in 1913 was $458,065, the lowest
ear. In 1920 a value of $142,201 was imported and this was
in 1921 to $249,205, which was still far below the pre-war

1919 statistics of imports for consumption the item of small
ıs further broken up, making in all seven classifications.
;s, including hatbands," amounted to 82 per cent of the
small wares in 1920 and 57 per cent in 1921; "cords,
ıd cords and tassels," the second largest item, constituted
nt and 38 per cent in each year, respectively. Bindings
in importance in 1921, followed by webs and webbing and
ngs; garters, suspenders and braces; and belts and belting.
ɔecially mentioned in the tariff act, was listed each year, but
e no imports under that heading.
s by countries show that Germany was the most important
the silk small-wares trade, which may be accounted for by
ıat nearly all of the hatbands came from Germany (some few
ı France). In pre-war years small amounts of the total
wares were supplied by Italy, France, and the United King-
since 1914, by Japan and China in increasing proportions.
:or 1920 show the highest value from the Netherlands,
lly transshipments of German goods. The lack of German
ɔn during recent years has added to the prosperity of the
ade, which has been reflected in increased imports to the
ates, greater from 1918 to 1921 than ever before.
ı from the Far East—Japan, China and Hongkong—have
considerably in the last few years, amounting to 44 per cent
tal in 1921. The class of imports showing the greatest
ı cords and tassels which rose from $10,898 in 1919 to

k small wares, except bandings—Imports for consumption—Revenue.

	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
				Per cent.
.....	50 per cent	$119,847	$59,923	50.00
.....	do	136,408	68,204	50.00
.....	do	101,226	50,613	50.00
.....	do	102,306	51,153	50.00
.....	do	178,605	89,302	50.00
.....	do	155,186	77,593	50.00
.....	do	257,178	128,589	50.00
.....	do	157,916	78,958	50.00
.....	do	50,402	25,201	50.00
.....	do	50,707	25,353	50.00
.....	do	31,765	15,882	50.00
.....	do	5,721	2,860	50.00
.....	45 per cent	36,819	16,568	45.00
.....	do	29,783	13,402	45.00
.....	do	27,186	12,233	45.00
.....	do	57,963	26,083	45.00
.....	do	76,240	34,308	45.00
.....	do	17,795	8,007	45.00
.....	do	32,218	14,498	45.00
.....	do	184,980	83,241	45.00

k bandings, including hatbands—Imports for consumption—Revenue.

	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
				Per cent.
.....	50 per cent	$834,284	$417,142	50.00
.....	do	844,444	422,222	50.00
.....	do	804,605	402,302	50.00
.....	do	918,192	459,096	50.00
.....	do	1,042,923	521,461	50.00
.....	do	965,032	482,516	50.00
.....	do	920,920	460,460	50.00
.....	do	753,027	376,513	50.00
.....	do	573,001	286,500	50.00
.....	do	510,755	255,377	50.00
.....	do	458,065	229,032	50.00
.....	do	165,753	82,876	50.00
.....	45 per cent	318,616	143,377	45.00
.....	do	275,047	123,771	45.00
.....	do	66,458	29,906	45.00
.....	do	85,773	38,597	45.00
.....	do	71,221	32,049	45.00
.....	do	36,641	16,488	45.00
.....	do	142,201	63,990	45.00
.....	do	249,205	112,142	45.00

k smallwares imported for consumption, value, fiscal years 1919–1921.

	1919	1920	1921
sing.....	$316	$42	$439
nd tassels.....	1,656	2,663	13,934
races.....	10,898	24,150	164,928
.....	894	1,491	1,359
at.....	4,031	3,842	4,320
.....	36,641	142,201	249,205
.....	54,436	174,419	434,185

ıdings, beltings, bindings, etc., not over 12 inches wide—Rates of duty.

Tariff classification or description.	Rates of duty, specific and ad valorem.
Webbings, gorings, suspenders, braces, beltings, bindings, * * * cords and tassels, any of the foregoing which are elastic or non-elastic, * * * made of silk, or of which silk is the component material of chief value,	50 per cent ad valorem.
....do.....	45 per cent ad valorem.
Bandings, including hat bands, beltings, bindings, bone casings, braces, cords, cords and tassels, garters, gorings. suspenders, tubings, and webs and webbings, composed wholly or in part of silk, and whether composed in part of india-rubber or otherwise, if not embroidered in any manner by hand or machinery,	50 per cent ad valorem.
* * * bandings, including hatbands, beltings, bindings, all of the foregoing not exceeding 12 inches in width, and if with fast edges, bone casings, braces, cords, cords and tassels, garters, gorings, suspenders, tubings, and webs and webbings, composed wholly or in chief value of silk, and whether composed in any part of India rubber or otherwise, if not embroidered in any manner, by hand or machinery,	Do.
* * * bandings, including hatbands, belts, beltings, bindings, all of the foregoing not exceeding 12 inches in width and if with fast edges, bone casings, braces, cords, cords and tassels, garters, suspenders, tubings, and webs and webbings; all the foregoing made of silk or of which silk or silk and india rubber are the component materials of chief value, if not embroidered in any manner, and not specially provided for in this section,	45 per cent ad valorem.

ourt and Treasury decisions, see surveys on cotton small- l on laces and embroideries.)

SILK WEARING APPAREL.

SUMMARY.

ıring apparel of silk, except knit goods and wearing apparel ;ed in any of the ways specified in paragraph 358, is included ·aph 317 of the act of 1913. The manufacture of wearing s not divided according to materials, but rather according ıaracter of garment made. It is therefore connected with ıfacture of woolen, cotton, and linen goods. There are te figures as to the size of the industry, but it undoubtedly many millions. The size of the establishments varies from ernationally known houses to small shops working on a basis. All large cities are to some extent centers of garment ;ure, but by far the greatest part of the industry, particularly s carried on in New York. Exports of silk wearing apparel, ıre first recorded in 1918, have run from $2,556,166 in that ;10,016,045 in 1920. Because of general commercial condi- ports for 1921 were much less than for 1920, but, even with ease, exports for 1921 were over $1,500,000 greater than or the same year. Pre-war imports averaged somewhat less 000,000 annually. This decreased abruptly during war The recovery in 1920 and 1921 is the result partly of a in favor of more elaborate garments, but it is due chiefly to eign prices. Large quantities of French hand-made blouses, ır, and various other articles of clothing, were bought because ceedingly low prices in France. Japan is the second country tance in our import trade in wearing apparel. This repre- inite lines of Japanese goods, particularly kimonos. Men's apparel forms a small part of the total imports, but what

usually comes from the United Kingdom. The organization
ciency of the garment trade are such that the American manu-
rs are not apprehensive of foreign competition. They are
ent upon outside sources only for ideas as to the trend of
because of the acknowledged style ascendancy of Paris.

General Information.

DESCRIPTION.

ring apparel has been defined by the Supreme Court as "arti-
hich are ordinarily worn—dress in general." Ready-made
g is clothing made to stock as distinguished from clothing
o order. Paragraph 317 of the act of 1913 provides for all
aring apparel except that which is ornamented with lace or
dery. Wearing apparel composed of silk and india rubber is
y mentioned in the tariff act, but is dutiable at the same rate
r plain silk wearing apparel and statistics are not separately

wearing apparel represents a broad manufacturing field; in
embraces several separate and distinct industries, distinct
ne another according to the garment made, but inextricably
up with the manufacture of similar garments of other materials.
ample, manufacturers of dresses seldom make any other type
ring apparel, not even waists and blouses, which represent a
fined and well organized industry, or women's underwear,
has various subdivisions. Men's shirts are made by concerns
class, men's neckties by another, and usually men's under-
y another. Thus it will be seen that there are at least six
industries comprehended under the general caption "wearing
" and few establishments in any one of the six is devoted
vely to making silk garments. The average articles of dress
required in such large quantities that standardization with
sequent economies is possible in all these lines. Although
ifferent equipment is necessary for different branches of the
y, for example, skirts and dresses, specialization on one or the
evelops greater efficiency in the labor and involves less intri-
uying and selling organizations. The difficulty of securing
e statistical data in regard to silk wearing apparel is evident.
fficulty is heightened by the number of small concerns in each
y and by the impossibility of separating ornamented and
mented wearing apparel in the trade, although separately
d for in the tariff act. The information in this survey has
uently been based primarily upon interviews with men in the
vith trade associations, and representatives of trade journals,
h the examiners at the United States Appraisers' Stores at
t of New York.

s clothing, such as shirts and neckties, constitute a substantial
ion of plain silk wearing apparel, but certain lines of women's
ailored blouses and tailored underwear, which have had con-
le vogue, would also fall within this classification.

DOMESTIC PRODUCTION.

-The United States is the largest silk manufacturing
ıe world, especially producing quantities of the silks
ality which are used in ready-made clothing. The very
also made in this country, but probably at a somewhat
than would be required for similar silks in older silk
g countries. One manufacturer of the highest type
ɔthing states that, in general, American silks are superior

dress goods, practically all of which come from France
ɔvelties or special style features which do not represent
ɔle amount of the quantity used by the industry. They
acquard designs, or Jacquard designs made with metal
in metal thread cloth; in fact, practically all of the metal
used is imported, and the quantity would vary from
ıson according to the exigencies of fashion. A second
goods imported consists of plain woven goods in fancy
borate design produced in small quantities. A third
up of plain goods of fine quality woven of finer thread
ıpactly than the American and having a more lustrous

every weave of silk on the market is used by dress
rs, but materials accepted in other lines are more limited.
for underwear must be washable, hence crêpe de chine,
taffetas, such as radium and the trade-marked "Pussy
l wash satins are well adapted for this purpose. Shirts,
e of materials that will readily stand laundering; crêpe
en having colored stripes or stripes of satin weave, and
vhich is a shirting having a spun silk filling in taffeta
ɾe with a satin stripe, are two types of silk shirting pro-
e quantities by domestic weavers. Japan supplies a large
of the silks used for shirtings, particularly pongees,
fugi, any of which may be plain or striped. These, with
, have been imported in considerable quantities during
ɾears. Tie silks are a very distinct class, the better grades
n only small quantities of one design, the principal reason
which are fancies and novelties. In the tie industry,
ɾesent a larger proportion to the total consumed than in
tting-up industry. The best grades in conservative pat-
rom England, the more conspicuous designs from France,
grades from Italy. The English silks of exclusive design
ares about 28 inches by 28 inches, frequently only three
in one design and those in different colors. The French
made in squares, but are sold by the yard, a few yards of
a customer.
the silk wearing apparel industry is dependent upon for-
l, and most manufacturers profess a preference for Ameri-

t.—Little specialized equipment is necessary in the manu-
ɾearing apparel, the most important being the ordinary
ıine, or power sewing machine, with all its various modi-
l adaptations, and in large standardized establishments
cutter, besides button-sewing and button-holing ma-

chines, various machines for applying trimming, and mechanical devices for pressing, an essential operation in the industry. Equipment for the manufacture of wearing apparel of any kind, although representing a large outlay of capital for an establishment of much size, is not difficult to secure, all being made in this country. The sewing machine is an American invention and now highly perfected, manufactured by large, heavily capitalized concerns. Similar machines are also made abroad, but the quality of the American product is attested by the number exported. In the calendar year 1918 exports of sewing machines amounted to over $8,000,000, and in 1919 to over $12,500,000. Because of the large number of machines shipped abroad, some wearing apparel manufacturers, especially manufacturers of shirts, fear that this is indicative of a growth in the wearing apparel industry in other countries, which will jeopardize their interests in the American market.

Methods of production.—Conditions under which wearing apparel is made differ so widely that there is great variety in the methods of production. Some articles, such as shirts, neckties, underwear, and the cheaper grades of women's garments, lend themselves to quantity production and standardization, but in the more expensive lines only a few garments may be made according to one model, as the trade which can afford to pay higher prices demands exclusiveness.

Organization.—This difference in the character of the output leads to great variations in the organization of firms manufacturing wearing apparel. Where more or less standardization is possible, they are made on the factory system, but in many cases such goods are made in customs shops, and even by individuals. Practices vary widely within any given branch of the industry. In silk dresses, for example, there is the large manufacturer producing quantities of dresses according to few models each season. There are smaller houses, which make up fewer dresses in greater variety to sell to the retailer, and there are the very exclusive shops which make and retail the dresses in one establishment. Some large wholesale houses make the dresses in their own shops, some send out the materials and designs on contract, and some buy from small manufacturers. There is no hard and fast line between any of these classes of establishments. Similar differences exist in other branches of the wearing-apparel industry. Men's shirts and neckties, although made by large factories, are also made by shops, sometimes of the most exclusive sort. There is much variation in the size of establishments. Such comparatively simple machinery is required that the manufacture of wearing apparel is frequently started on a small scale.

As it is not the materials but the types of garments produced which represent lines of demarcation in the industry, no statistics concerning the silk wearing-apparel industry are available either from census reports or from trade associations. The character of ownership in the clothing industry in general is described in the census report of 1914, as follows: "Of the entire number of establishments reported for the industry in 1914, 42.9 per cent were under individual control, 16.8 per cent were operated by corporations, and 40.2 per cent were under 'all other' forms of ownership. This last group includes general and limited partnerships, cooperative associations, and any other form of ownership not classed as 'individuals' or 'corporations.'

s in this group reported 41.9 per cent of the average
ge earners and 44.4 per cent of the value of products.
entage of 'all other' is caused by such a condition in
e, which reported 68.9 per cent of the total number of
, 64.2 per cent of the total average number of wage
2.9 per cent of the total value of products, and natu-
he totals for the United States."[24]

distribution.—A large proportion of the industry is
r York, but all large cities are centers of silk wearing-
acture. Besides New York, Philadelphia, and Balti-
st, Chicago and Cleveland in the Middle West, and Los
West are important in this industry. New York is, of
st important market and has always enjoyed a certain
stige as the originator of styles in this country and as
oint of import of French models in women's wear and,
e, of English models in men's wear.

oduction and consumption.—No figures, or even esti-
estic production in the silk wearing-apparel industry
of the industry are available. Such data would be
if not impossible, to obtain, because, first, there are so
ops and establishments which in the aggregate con-
ge quota to the total production, and, second, silk
el is made by the same concerns that manufacture gar-
ool, cotton, or linen, so that a particular manufacturer
tly be unable to tell how much of one and how much
produced. It may safely be surmised that each of the
referred to produces goods valued at several million
lly. Silk dresses are worn in all parts of the country,
of women, and at all times of the year. The market
wear is more limited, but the use seems to become more
ear. Much of this is of course supplied by the manu-
lk knit underwear, but the very cheap grades are made
ight habutai and crêpe de chine and can undersell the
The very fine grades of underwear are also made from
These are usually elaborately trimmed with lace or
ence would fall under the classification of paragraph
sumption of silk shirts somewhat increased during the
wages, but year in and year out there is a definite and
this type of garment in certain localities. The extreme
outhwest makes woolen clothing unbearable during a
the year. This has led to the custom of dispensing
consequently the silk shirt of rather good quality finds
market in that part of the country. The fact that the
is by far the largest producer of broad silks indicates
wearing-apparel industry in this country, which would
t of the broad silks, is much larger than in any foreign

ports.—Export statistics of silk wearing apparel were
in 1918, in which year they amounted to $2,556,166;
reased by over 100 per cent in 1919 to $5,600,035 and
0 per cent in 1920, when they were $10,016,045. In
equaled $7,261,798. The large number of countries

[24] actures, 1914, vol. 11, p. 188.

which receive substantial amounts shows that this trade is widely distributed. These statistics include silk knit goods, and it is probable that a considerable proportion represents silk hosiery.[25] During each of the years for which statistics are given, exports to Canada far exceed those to any other country. Canadian import figures show that about one-third of the silk wearing apparel received from the United States consists of hosiery. Since Canada is the most important foreign market for American-made silk wearing apparel, a brief analysis of Canadian import statistics would be of interest. The total was $1,491,751 in 1918, of which 82 per cent came from the United States; $3,233,855 in 1920, 83 per cent from the United States, and $2,219,108 in 1921, 67 per cent from the United States. The classifications which make this total are hosiery, blouses, shirts, underwear, shawls, and clothing n. o. p. f., stated in order of importance except for the last, which is by far the greatest, amounting to over $2,000,000 in 1920 and over $1,600,000 in 1921. The United States supplied more than 78 per cent of the unspecified silk clothing and more than 90 per cent of both the hosiery and blouses in 1920, but only 61 per cent of the unspecified clothing and 83 per cent of the blouses in 1921. The per cent of hosiery varied little. Silk shirts are the only important item of which the largest proportion does not come from the United States. These are principally supplied by Japan, but the total is so small as not to affect the position of the United States in the Canadian silk wearing apparel market.

The United Kingdom ranked next to Canada as a consumer of American silk apparel in 1919 and 1920, in the latter year taking a value of $1,894,526. The value sent to Argentina in 1921 amounted to $1,028,976.

Cuba and Australia followed in importance, but exports to none of these equaled $1,000,000. The United States sent silk wearing apparel, valued at $411,181, to France in 1920, but this was less than one-sixth the amount received from that country in the same year.

FOREIGN PRODUCTION.

Although no statistics of production in foreign countries are available, there are many indications that France is first in this industry. An examination of imports into other countries usually discloses the fact that France is the chief country of origin. Few articles of wearing apparel are itemized in the statistics of many countries, but cravats are specified in the reports of most South American countries, amounting usually to a fair proportion of the total imports of silk wearing apparel in those countries. This may be because women's ready-made garments are less popular than in the United States. France, Germany, Italy, Great Britain, and Austria-Hungary are the principal countries from which silk cravats are obtained by South American countries. France supplies by far the larger part of other articles of silk wearing apparel imported into South American countries. The total exports of silk wearing apparel from Japan are rather large, but consist almost entirely of special articles, kimonas and nightgowns, as the Japanese can not make occidental clothing which in style and cut can compete in the markets of Europe and America.

[25] Export statistics for the first quarter, 1922, are given in more detail. See *Addenda*, p. 58.

IMPORTS.

r consumption of plain silk wearing apparel were not
tely from those ornamented with lace and embroidery
e act of 1913, so a table of total imports of silk wearing
1891 to 1921 is given, followed by a second table of
ain silk wearing apparel from 1914 to 1921. The highest
$5,275,668 in 1911 and the lowest $1,310,700 in 1899.
921 were $5,225,009, second only to 1911. The period
) 1911 was marked by a gradual increase in imports,
diminished in 1912 and 1913. The total imports for
ger than for either of the two preceding years, but it is
) note that over 40 per cent of the year's total came in
rst quarter under the higher tariff of 1909, the duties
.05 per cent, while the duties for the last three quarters
r 56.23 per cent of the valuation. During the remaining
the act of 1913 the annual value of imports was less than
ears under the act of 1909. This was probably due to
conditions of transportation, restriction of export, and
of luxury manufacture in belligerent countries. Silk
separately stated in import for consumption statistics.
greatest imports was 1913, for which 1,304 dozen, valued
are recorded. Since then the largest amount was 271
d at $10,815, in 1917.

s always been the most important source of the imports
g apparel into the American market, averaging $2,647,798
ears 1910–1914, over 50 per cent of the total. Although
decrease in imports from France during war years, the
$982,639 in 1918, and imports for 1921 were $2,749,610.
ntributed $1,098,221 in 1910 and $1,040,384 in 1911,
fell to $403,810 in 1912 and were less in each successive
)20. Imports from the United Kingdom were $1,098,542
have never been as much as one-half as great in any
Export statistics of these countries are not given in suf-
l to ascertain the varieties of wearing apparel supplied by
wearing apparel from Japan averaged annually less than
lion dollars in value prior to 1916, but in 1920 amounted
)2. This was the largest value imported from any one
ier than France during the period shown in the table.
ta for 1921 was not so large. Japanese imports did not
ice of the diminished European supply, because they are
apanese products, consisting largely of kimonas and night-
e increase represents rather an increased activity of
anufacturers and a more energetic sales campaign in the
arket than a supplanting of other trade.

erviews with examiners at the appraisers' stores in New
and with men in the trade, it has been ascertained that
part of the silk wearing apparel imported is women's
parel, most of which comes from France. Paris is the
ter for women's styles, and costumers and manufacturers
untries go there for inspiration. Paris gowns are bought
e suggestions they carry; they are imported, for the most
y as models to be copied with various modifications and
expectation of being sold in this country at a price which

would cover the cost plus the duty, being considered an overhead expense. Under section IV, paragraph J, subsection 4, of the tariff act of 1913 articles of women's wearing apparel, for use as models only, may be imported in bond without payment of duty if reexported within six months. These gowns are frequently sold in Canada at reduced prices to avoid the necessity of paying duty in the United States. This provision is considered by the industry to be more important to success than a protective tariff would be.* Imports of women's wearing apparel, for the most part are not competitive with domestic production, but are necessary to stimulate the industry in this country, as Paris is the acknowledged leader in styles. There has been some increase in the imports of French handmade blouses which are offered for sale. This has been described as a temporary condition resulting from present relative prices as ordinarily it would not be profitable to import them in any quantities. Apparel ornamented with beading is not provided for in paragraph 358; hence would be imported under paragraph 317 at 50 per cent ad valorem. The amount of such goods that comes in depends entirely upon style. In the last few years it has been popular and some of the imports of waists and dresses entered for consumption and therefore offered for sale, have been those ornamented with beads.

There is no provision for the temporary free importation of men's wearing apparel, nor would such a provision have any significance, especially in silk clothing which comprises chiefly shirts and neckties wherein there would be little need for model garments. The importation of men's goods, determined to a large extent by quality, is on a small scale by haberdasheries and by individuals especially meeting the excellent material and superior make of French and English shirts. The Japanese have sought to develop this trade but although they use the best of silks the cut and make of their garments is as yet too poor to find favor where price is not the controlling factor. High-grade ties as other lines of men's wear including pajamas and underwear come from England and are more nearly competitive in character with the American product than are other lines of wearing apparel, but in actual imports the quantity is so small as not to affect the domestic industry to any extent.

To sum up, in general, imports of silk wearing apparel do not offer any real competition to the domestic industry in the home market. Increased imports have in large measure been caused by the present rate of prices. Women's wearing apparel is brought in chiefly by the manufacturers themselves to be used for models and not for sales purposes; men's wearing apparel, usually distinguished for quality or workmanship, is imported by shops which carry specialties or by individuals.

TARIFF HISTORY

The tariff rate on silk wearing apparel has always been a high one, varying only from 50 to 60 per cent under different acts. It was 60 per cent under the act of 1890, 50 per cent under the act of 1894 and again 60 per cent under the act of 1897. These rates

* American manufacturers state that because of American workmanship and efficiency of organization foreign goods are not normally competitive in [illegible] of the trade considers on a very small and American manufacturers must follow the fashion dictate of Paris. Hence it is necessary to have advantage of models to reproduce [illegible] as soon as possible, and the desire for variation of the product for the entry of such goods.

aring apparel whether plain or ornamented. The ned the 60 per cent rate, but made a special provision or wearing apparel ornamented with lace or embroid- Lever or Gothrough machine. The act of 1913 pro- namented wearing apparel, regardless of the manner ce or embroidery was made, at 60 per cent, and for ig apparel (par. 317) at 50 per cent.

COMPETITIVE CONDITIONS.

of the industry is surrounded by conditions more or to it alone. France leads the world in the dress or ry, inasmuch as it dictates the fashion, but it does ial production. Paris gowns are sold in all countries ndividual purchases of the well to do, not the large- f the masses. The bulk of American ready-to-wear le on the quantity-production basis, many garments ne model. The more exclusive shops carry gowns French, gowns individual in style and ornamentation. s not superior to an American either artistically or in nship, but Paris sets the pace of fashion and Parisian the trend of style from season to season. American find it necessary to follow the French suggestions ench model gowns to stimulate their own trade by on and adaptation of the latest accepted ideas. In spect, except wage rates, the American industry has advantages and the lower foreign wage rates do not esent cheaper labor, being offset by greater efficiency establishments. The clause providing for the free f models in bond (Sec. IV, par. J, subsec. 4, act of lered of the greatest importance from a tariff point of ican dress manufacturers.

STATISTICAL MATERIAL.

E 13.—*Total silk wearing apparel—Imports by countries.*

[Fiscal years.]

——	1910	1911	1912	1913	1914	1915
.....	$2,571,343	$2,708,147	$2,621,292	$2,519,123	$2,847,584	$1,439,039
.....	427,803	373,374	448,728	519,072	405,214	429,061
.....	763,526	1,396,342	455,293	452,293	475,547	436,301
.....	1,268,227	1,124,324	438,824	342,013	253,423	108,759
.....	36,238	68,288	54,265	86,278	39,844	25,557
.....	71,257	82,125	79,194	76,890	108,718	127,768
.....	168,555	213,565	173,911	122,171	115,715	63,065
.....	4,986,365	5,367,915	4,248,891	4,137,840	4,246,345	2,629,550

——	1916	1917	1918	1919	1920	1921
.....	$1,715,174	$1,634,566	$982,639	$1,352,635	$2,602,539	$2,749,610
.....	367,489	826,467	1,103,276	896,666	2,261,732	1,683,894
.....	278,857	852,465	188,522	114,746	325,161	509,125
.....	24,367	.....	.....	.....	32,591	111,890
.....	45,270	67,256	71,667	12,825	65,299	56,190
.....	153,749	39,355	47,544	32,526	145,035	169,562
.....	42,205	78,342	78,769	51,288	228,978	241,653
.....	2,790,309	3,757,596	2,364,135	2,450,476	5,661,375	5,521,894

TABLE 14.—*Total silk wearing apparel (other than knit goods)—Imports for consumption—Revenue.*

Fiscal year.	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
				Per cent.
1891	60 per cent ad valorem [1]	$1,763,208	$1,027,885	58.29
1892	do	1,337,861	892,757	60.02
1893	do	1,486,362	892,055	60.01
1894	do	965,103	579,078	60.00
1895	do	104,709	62,826	60.00
1895	50 per cent ad valorem	1,232,525	616,262	50.00
1896 [2]	do	2,618,986	1,309,508	50.00
1897 [3]	do	2,058,207	1,029,111	50.00
1898	do	129,224	64,612	50.00
1898	60 per cent ad valorem	1,398,236	838,942	60.00
1899	do	1,310,700	786,420	60.00
1900	do	1,385,230	831,138	60.00
1901 [4]	do	1,586,330	951,795	60.00
1902 [5]	do	2,293,269	1,375,958	60.00
1903	do	2,535,522	1,521,300	60.00
1904	do	2,252,847	1,351,699	60.00
1905	do	2,254,003	1,352,907	60.00
1906	do	2,670,094	1,601,997	60.00
1907	do	3,458,187	2,074,838	60.00
1908	do	3,141,616	1,884,880	60.00
1909	do	2,730,523	1,638,085	60.00
1910	60 and 70 per cent ad valorem [6]	4,437,438	2,663,113	60.01
1911	do	5,275,668	3,166,277	60.01
1912	do	3,940,576	2,365,477	60.03
1913	do	3,752,089	2,253,020	60.03
1914	do	1,737,988	1,043,676	60.05
1914	50 and 60 per cent ad valorem	2,316,977	1,302,825	56.23
1915	do	2,508,302	1,409,659	56.20
1916	do	2,805,545	1,629,145	58.07
1917	do	3,316,074	1,863,811	56.20
1918	do	2,524,012	1,376,132	54.52
1919	do	1,876,850	1,080,049	57.55
1920	do	3,727,389	2,220,986	59.58
Annual average		2,564,462	1,498,941	58.48
1921	50 and 60 per cent ad valorem	5,225,009	2,934,775	56.17

[1] 8 cents per ounce plus 60 per cent when in part of india rubber.
[2] Includes $154 previous duties under act of 1890.
[3] Includes $81 previous duties under act of 1890.
[4] Includes $76 from Porto Rico under act of 1900.
[5] Totals, 1902–1920, include imports from Philippine Islands and Cuba. Philippine acts of 1902 and 1905; reciprocity treaty with Cuba, 1902.
[6] Wearing apparel wholly or in chief value of laces, embroideries, etc., made on a Lever or Gothrough machine dutiable at 70 per cent.

TABLE 15.—*Silk wearing apparel not ornamented with lace or embroidery (except knit goods and corsets)* [1]*—Imports for consumption—Revenue.*

Fiscal year.	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate. [2]
				Per cent.
1914	50 per cent ad valorem	$873,731	$436,791	49.99
1915	do	930,674	463,964	49.85
1916	do	912,908	456,454	50.00
1917	do	1,220,892	610,401	49.67
1918	do	964,051	481,519	49.94
1919	do	684,619	340,517	49.74
1920	do	1,537,615	768,643	49.99
1921	do	2,027,851	1,007,480	49.68

[1] Not separately stated prior to Oct. 4, 1913.
[2] Usually less than 50 per cent, because imports from the Philippine Islands or for special uses are free.

rsets (not embroidered, etc.)—Imports for consumption—Revenue.

e of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
	Dozen pairs.				*Per cent.*
t	689	$26,477	$15,886	$38.43	60.00
	751	31,419	18,851	41.83	60.00
	796	31,281	18,768	39.29	60.00
	1,304	39,476	23,685	30.27	60.00
	215	8,449	5,069	39.28	60.00
t		14	7		50.00
	18	715	357	39.72	50.00
	105	5,011	2,505	47.72	50.00
	271	10,815	5,407	39.91	50.00
	241	3,809	1,904	15.80	50.00
	77	4,793	2,396	62.24	50.00
	101	7,201	3,600	71.29	50.00
	5	271	135	54.20	50.00

E 17.—*Total silk wearing apparel*[1]*—Domestic exports.*

[Fiscal years.]

xported to—	1918	1919	1920	1921
		$1,297	$125,762	$5,428
	$2,644	298,710	222,419	85,032
	4,202	2,411	411,181	104,007
	5,155	3,029	170,774	40,257
	5,823	72,915	204,532	186,570
	195,923	964,226	1,894,526	915,148
	1,179,062	1,803,877	2,603,364	1,328,350
	37,679	75,401	123,951	116,862
	158,981	265,213	288,715	506,799
	139,767	246,651	612,620	529,449
	139,907	362,169	978,893	1,028,976
	17,142	80,932	224,256	121,565
	34,121	128,248	74,468	74,003
	13,479	39,443	143,664	124,760
	328,682	652,682	542,597	905,499
	85,370	100,766	216,791	283,063
	208,229	502,065	1,177,532	906,030
	2,556,166	5,600,035	10,016,045	7,261,798

ted prior to 1918. Includes silk knit goods and silk wearing apparel ornamented with

Silk wearing apparel—Rates of duty.

Tariff classification or description.	Rates of duty, specific and ad valorem.
* clothing ready-made, and articles of wearing apparel of ery description, * * * made up or manufactured wholly part by the tailor, seamstress, or manufacturer, composed of lk, or of which silk is the component material of chief value, ot specially provided for in this act,	60 per cent ad valorem.
vided, That all such clothing ready made and articles of wear- ig apparel when composed in part of india-rubber (not in- uding gloves or elastic articles that are specially provided for this act), shall be subject to a duty of	8 cents per ounce, and in addition thereto 60 per centum ad valorem.
* * clothing ready made, and articles of wearing apparel of very description, * * * made up or manufactured wholly r in part by the tailor, seamstress, or manufacturer, composed f silk, or of which silk is the component material of chief value, nd beaded silk goods, not specially provided for in this act,	50 per cent ad valorem.
* * clothing ready made, and articles of wearing apparel of very description, * * * made up or manufactured in whole or in part by the tailor, seamstress, or manufacturer; ll of the above-named articles made of silk, or of which silk is he component material of chief value, not specially provided or in this act, * * *	60 per cent ad valorem.
ovided, That any wearing apparel or other articles provided for n this paragraph (except gloves) when composed in part of india-rubber, shall be subject to a duty of	Do.

Silk wearing apparel—Rates of duty—Continued.

Act of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1909	402	* * * clothing ready made, and articles of wearing apparel of every description, * * * made up or manufactured in whole or in part by the tailor, seamstress, or manufacturer; all of the foregoing composed of silk, or of silk and metal, or of which silk is the component material of chief value, whether in part of india-rubber or otherwise * * * not specially provided for in this section, * * * *Provided*, That articles composed wholly or in chief value of any of the materials or goods dutiable under this paragraph shall pay not less than the rate of duty imposed upon such materials or goods by this section: *Provided further*, That tamboured, embroidered, or appliquéed articles or fabrics shall pay no less rate of duty than that imposed upon the material if not so tamboured, embroidered, or appliquéed.	60 per cent ad valorem.
1913	317	Clothing, ready-made, and articles of wearing apparel of every description, * * * made up or manufactured in whole or in part by the tailor, seamstress, or manufacturer: all the foregoing composed of silk or of which silk or silk and india rubber are the component materials of chief value, not specially provided for in this section.	50 per cent ad valorem.

COURT AND TREASURY DECISIONS.

There has been much litigation upon goods in part of silk under paragraph 317 in competition with paragraphs not in the silk schedule of the act of 1913, principally paragraphs 358 and 333. Two cases not involving silk as a component material have been generally followed. They are United States *v.* Snow's United States Sample Express Company (6 Ct. Cust. Appls. 120) and Loewenthal *v.* United States (6 Ct. Cust. Appls. 209). The merchandise in issue in the Snow case consisted of shirt bosoms composed of cotton or flax, ornamented with loom-woven tucks, tuckings chief value. The provision in paragraph 256 of the cotton schedule for "wearing apparel * * * composed of cotton or other vegetable fiber, or of which cotton or other vegetable fiber is the component material of chief value, * * * made up or manufactured wholly or in part," was held more precisely and specifically to describe the merchandise than the provision in paragraph 358 for "tuckings, * * * and articles made in whole or in part of any of the foregoing fabrics or articles; * * * of whatever yarns, threads, or filaments composed." The required attributes of wearing apparel were declared to most closely describe and identify the goods which were held dutiable under paragraph 256.

The merchandise in the Loewenthal case consisted of tunics composed of lace nets, beaded, and motifs, garnitures, and gimps of beads with net foundation, the beads forming various designs, the entire article being ready to be applied to garments, together with running lengths or strips of such beaded designs likewise on net foundation ready to be applied to garments. The provisions in competition were paragraph 333, relating to beads and spangles and other articles not appliquéd, but composed in chief value of beads, and paragraph 358, which includes, among other articles, ornaments and trimmings.

The articles were held not to be appliquéd in the tariff sense because not ornamented with a pattern or design independently fabri-

g in chief value of beads, were held to come within

ave been applied to such silk goods as women's black
t 38098); dresses and other wearing apparel in chief
l in part of nettings, ornaments, braids, or trimmings
7); silk scarfs, with fringes on the edges for ornament
Abstract 39633); blouses, robes, and other wearing ap-
ıd netting (Abstract 39657); infants' capes, beaded,
s silk wearing apparel (Abstract 39778); garments of
ırt of trimming, in the form of fringe and others orna-
ıaded trimmings, the beads strung on a thread and then
ed upon the garment in such a manner as to form a
n (Abstract 39842); knitted underwear, in chief value
ct 40082); which were held to come within paragraph
of 1913. Fringed scarfs of silk are dutiable at 50 per
ıis paragraph and articles fringed by withdrawal of
the fringe tied in designs with separate threads intro-
er cent under paragraph 358. (Abstract 39633, of 1916,
66, of 1915.)
ing have been held to come within paragraph 358:
silk and an elastic band of india rubber (Proctor Co. *v.*
, 6 Ct. Cust. Appls. 119); woven fabrics of light texture,
to 90 centimeters in width and 170 centimeters in length,
n the trade as veils, or as automobile and chiffon veils,
ır automobile scarfs (Van Raalte *v.* United States, 7 Ct.
299); silk hose and half hose, ornamented with "clock-
7729, T. D. 35459); wearing apparel of cotton and silk,
or trimmed with lace (Abstract 37776); silk shawls in
ıtion lace (Abstract 41089).
ts with lace trimming unattached, the trimming being
ı the same shipment with the corsets and appropriately
ı identifying numbers, so that they can be readily selected
sets for which they are intended, are dutiable as lace
parel under paragraph 358 of the act of 1913 and not as
; apparel under paragraph 317. (G. A. 8366, T. D. 38476,

obes, and other wearing apparel of silk net and chiffon,
with beads or spangles, beads in chief value, were held
ıder paragraph 333 and not under paragraph 317. (Ab-
)2.)
ds "by the tailor, seamstress, or manufacturer" might be
om this paragraph as unnecessary.

SILK KNIT WEARING APPAREL.

SUMMARY.

ous advances have been made by the silk industry as a
ore than twice as much raw silk having been consumed in
ı 1911. Imports of raw silk in 1911 amounted to 22,372,248
valued at $72,708,253, and in 1920 to 47,182,837 pounds,
t $437,954,994. The expansion in knit-goods manufacture
ı absorbed a considerable proportion of this difference, and

of the various branches of the silk industry it was probably one of the least affected by the slump of 1920–21.[27]

As a silk product knit goods are second only to broad silks. The total value of silk knit goods (including fabric) produced in 1919 amounted to $204,026,827, an increase of 393 per cent over 1914. Various items constituted this total in the following proportions: Hosiery, 62.80 per cent; outerwear (fancy knit goods) and gloves, 27.25 per cent; underwear, 6.74 per cent; fabric, 3.15 per cent; and thread, yarn, etc., 0.06 per cent. From 1909 to 1914 hosiery showed the greatest increase of any product of the silk knit-goods industry, the quantity according to the 1914 census being twenty times what it had been five years before. Although hosiery is still the principal kind of silk knit goods, from 1914 to 1919 the growth of outerwear production was the largest. At the same time the manufacture of silk underwear has been stimulated by a quickened interest in glove silk garments.

Imports form an inconsequential and diminishing part of the total consumption, the average for the 30 years, 1891 to 1920, being only $412,575, about one five-hundredth part of the production in the last census year. The proportion of imports to domestic production was tending to decrease prior to the war. In 1910 imports equaled 10 per cent of production and in 1914 less than one-half of 1 per cent.

Exports are now very much larger than imports. There are no official figures, but the value of silk hosiery sent to Canada alone is many times the total silk knit goods imported into the United States from all countries. The American market, however, is probably the best in the world for this class of merchandise and absorbs the principal part of the domestic output. There has been no foreign competition in the past, but such a large proportion of this industry has developed during the last few years because of enormously increased demand (not like some industries, because the war proved a barrier to foreign trade) that other countries have in all probability enlarged their facilities for making silk knit goods or will soon do so in order to share in a trade which is proving so promising.

TABLE 18.—*Silk knit wearing apparel—Summary table.*

Year.	Domestic production.	Imports for consumption.	Amount of duty.	Ratio of imports to production.	Actual or equivalent ad valorem rate.
				Per cent.	*Per cent.*
1910	[a] $4,548,708	$456,757	$274,054	10.04	60.00
1911		291,811	175,087		60.00
1912		201,741	121,045		60.00
1913		250,794	150,477		60.00
1914	[b] 38,645,598	181,135	95,625	.47	52.79
1915		112,151	56,076		50.00
1916		77,538	38,769		50.00
1917		121,358	60,679		50.00
1918		60,574	30,287		50.00
1919	[b] 197,569,827	29,080	14,540	.01	50.00
1920		108,500	54,250		50.00
1921		164,017	82,008		50.00

[a] Figures for 1909.
[b] Not including fabric in the piece.
[27] The commission throughout says: "Those mills equipped to handle only plain organizine and tram, such as used in yarn dyed manufactures, have had poor business, but those handling crêpe and hosiery tram report a good year. (*Mid-year report* of the Silk Association of America, 1920–21.)

General Information.

DESCRIPTION.

al classes of silk knit goods are hosiery, underwear, rs, and neckties, and ready-made clothing of such rsey. Silk hosiery, like cotton hosiery, may be seam-shioned, or cut from the fabric.

DOMESTIC PRODUCTION.

States is probably the largest producer of silk knit orld, because of the enormous quantities of silk hosiery sumed in this country.

–Raw silk of 13/15 denier size doubled and twisted into d tram or hosiery yarn, of 2½ to 5 turns twist per inch, osiery much more extensively than spun silk which, s inferior strength and elasticity, is less satisfactory for ough frequently used in seaming. A two-thread tram er twist, as much as eight turns to the inch, is knitted from which gloves and light-weight underwear are cut. are made from low grade raw silk of 10 to 15 ends united wist. The high cost of raw silk has somewhat lessened for these articles.

ng industry is now second only to the broad-silk industry er of raw silk. The manufacture of hosiery is the most ranch, followed by outerwear, gloves, and underwear. 00,162 pounds of raw silk and 1,913,478 pounds of thrown-n-silk yarn, and in 1919, 1,265,508 and 5,711,110 pounds, , were used in the making of hosiery and other knit s amount was not entirely devoted to the production of les as quantities of knit goods are made of mixtures of ol or silk and cotton. Although a large proportion of l in knitting is bought in the raw, the throwing (process of n by twisting, or doubling and twisting, the strands of s seldom done in the knitting mills. The knit-goods ers who purchase raw silk, with the exception of one or concerns, have it thrown on contract by commission most of whom are located in Pennsylvania. It is evident bove figures that the tendency is toward the purchase of k in increased proportions.

nt.—Knitting machines on which silk is used are not different from those using cotton. In the hosiery industry part of the silks are made on full fashion machines.[29] These of the Cotton patent type, though originally the product invention, were developed by German manufacturers and ry was practically dependent upon this source prior to the w, however, they are being built in the United States, but t has been limited and the full fashioned hosiery industry xpand as greatly as it would have if machines had been The machinery for manufacturing knit fabric has been ed that fabrics produced on knitting machines may possess y all the desirable characteristics of woven goods, with the

[29] "Cotton hosiery."

advantage of cheaper production, because hose can be produced four or five times as quickly and therefore labor and overhead items are smaller per unit. Some hoses, such as jersey cloth, are made on circular machines with either latch or spring beam needles. The most recent development of hose knitting and that now likely to gain in importance, is the warp-knitting machine of which there are many varieties. These are flat spring needle machines of very fine gauge producing a fabric of extraordinarily even texture. Milanese and tricot, the best-known warp knitting machines are imported from England and Germany or in some instances built in the knit goods factory.

Methods of production.—Silk hosiery is the most important item of the silk knit-goods industry. The same processes described in the manufacture of cotton hosiery are also used in the production of silk goods. There are three distinct types of hosiery according to the process of manufacture, the full-fashioned, the seamless or mock seamed, and that cut from the knit fabric. In the first two, form is given to the stocking in knitting; in the third, the knitting simply produces a fabric from which the stocking is to be made.

Full-fashioned hosiery requires greater skill in the knitting than does seamless and there are more processes. In making a full-fashioned stocking the leg is knit on one machine and then transferred to another for the completion of the foot. This gives a flat, shaped piece of material which must be seamed down the back of the leg and along the sole of the foot and "looped" or closed across the toe. Looping is a special process done on a machine which catches together only a single loop at a time from each of the pieces, making a very flat joint. The heel is also looped. This is known as the French system and is used in America. The English method requires only one machine. The sole is knit as a continuation of the upper part of the foot, then looped back at the toe and seamed along either side of the foot, but with no seam at the toe. The stocking is completed by a seam down the leg. There is no transferring in this process but the seaming is more complex.

Seamless hosiery is made on circular machines which are so nearly automatic that the completion of the hose after removal from the machine involves only the looping of the toe. A seam, though not necessary to this type of hosiery is frequently added to make it resemble the full-fashioned article. In some cases what appears to be a seam is only an imitation formed during the knitting process. Socks or ribbed stockings, even when seamless are made on two machines. The ribbing is done on one and then the article is transferred to another which knits the main portion.

The third kind of hose is cut from fabric as any other garment would be. This is a much more important branch of the silk hosiery industry than it is of the cotton hosiery industry. Only high-grade and expensive silk hosiery are cut from silk fabric while the reverse is true of cotton. Hose cut from silk fabric have less elasticity than those knit on a regular web knitting machine, but can be made of finer stock and in variations of patterns which are not so easily introduced on a hosiery machine. The fabrics used for stockings, gloves and underwear are made on warp knitting machines of the tricot and milanese types. They are so fine that it is difficult to determine the

a knit, hence they are frequently spoken of as tricot
weave," though more generally used terms applicable
glove silk" or "Italian silk." In the tricot machine
und on a beam and is directed to the needles by small
each thread on the machine; by means of a racking
eads are carried alternately left and right so that the
read are interlocked with those of the adjacent thread.
abric can be developed in open work and fancy stitches
n of needles or variation in the racking. The milanese
on a machine for which the warp threads are supplied
mounted side by side in such a manner that they form
rain revolving in an oval circuit. This allows two sets
e from either side of the oval, to be fed into the machine
the needles operating first upon the threads from the
ie oval, and then upon those from the far side of the oval.
s are moving laterally, each gradually replacing the one
he threads on the near side of the oval, or lower set of
y approach the needles, ultimately become the upper set
he threads in the lower course move from left to right and
pper course from right to left. Any given thread is thus
tep by step, tracing a diagonal course through the fabric,
ection and then in another. The finished fabric, upon close
will show the crossing and recrossing of these threads.
asily distinguished because of the looped nature of the
makes it difficult to follow any one thread with the eye
difference as a slight thickness of the yarn makes it stand
ece. This construction of the fabric makes it impossible
orm "runners" such as occur in ordinary weft knitting.
ondingly less elastic, and less suitable for hose or close-
garments. It is so soft and pliable that garments cut
ess bulky than those of woven fabric.

and the milanese fabrics are made 60 inches and more
Stockings and gloves are cut from the fabric by steel dies.
arranged that all parts of an article and as many articles
folds of material inserted under the die are cut at one
gloves and stockings are then seamed on power sewing
One operation which differs from the usual sewing process
orcement of the glove tips and stocking heels. An extra
is added in such a manner that except where it falls into
appears to be attached to the other material by the finest
g. This is done on a machine equipped with a horizontal
two thicknesses of material pass vertically beneath the
ght angles to it, being folded over at the line on which the
o be done. The spacing is so arranged that the needle
t a minimum of the material, making the stitches almost
ble on the right side. The gloves require, besides seaming,
ment of the facing around the opening and the insertion
eners, which is done by a machine. After the sewing and
ing-up processes are completed, the stockings and gloves
ed on forms and steamed. In some factories where goods
iest class are made this is done by hand, each article
on a form being held over a jet of live steam. This is a slow
nd more expensive than the use of patent forms, but it is

med to be superior for silk because of the higher luster imparted he fiber. Hosiery cut from silk-knit fabric is usually made of ot-weave material, as it is more elastic than the milanese, though so than weft-knit fabric. Moreover, the tricot can be developed variety of patterns, particularly open-work stripes, which at times very popular for women's hose. Gloves are more frequently made he milanese material. Women's underwear made of knit-silk ric may be cut from either the tricot or the milanese. This re- es more labor than hosiery or gloves, usually one garment at a time ut with hand shears according to a well-marked pattern, and the shed garments are pressed singly by hand. Glove-silk underwear enerally made up in tailored designs. Because of the similarity rocesses in the manufacture of cut silk hosiery, gloves, and under- r, the three are frequently made by one concern.

Warp-loom fabric in various textures may be used for any cut goods. ause of the parallel position of the yarns, this variety of knitting specially adapted to longitudinal stripes and is frequently em- yed in the construction of scarfs. Sweaters are either full-fash- ed, i. e., shaped on the knitting machines, or cut from knitted fabric. y are usually made on flat knitting machines of the weft type, metimes with Jacquard attachments, which produce elaborate pat- ns. Some of these flat machines have automatic narrowing de- s, which must be "set" for each narrowing operation, but fre- ntly they are only semiautomatic, much handwork being required he narrowing. A new line of manufacture which is gaining some portance is that of knitted dresses. Dresses cut from knitted fabric n as jersey, whether wool, silk, or artificial silk, have been on the rket for many years, but a comparatively recent idea is the full- ioned dress made of knitted parts shaped especially for the pur- e. Most frequently these are developed in all-wool or in a com- ation of silk and wool, but there is at least the possibility of the ilk fashion-knitted dress.

rganization.—There are four more or less distinct branches of silk knit goods industry according to articles produced, but ording to materials used they are frequently not differentiated n cotton and wool. These are full-fashioned hosiery, seamless iery, glove silk (which is essentially a silk industry), and outer r. Full-fashioned hosiery is usually made in large, well-equipped, heavily capitalized establishments. This is because one full- ion machine costs several thousand dollars and two such machines required for the completion of the knitting operation besides small chines, such as loopers and sewing machines. The initial expense quipping a full-fashioned hosiery mill is very large, and running enses are so heavy that small-scale production is not feasible. mless hosiery requires less outlay of capital, so that the size of n mills varies from a few machines to several thousand. Fre- ntly one large company will own many mills scattered over a siderable area to utilize labor in small towns where power is ly available. This is particularly the case in Tennesssee and other thern States where the abundance of water power has been con- ed into electrical energy easily transmitted long distances. As fine gauges of full-fashioned and of circular machines may be used making cotton or silk, a mill does not necessarily specialize on one he exclusion of the other, frequently making both in different

ording to the demand of the season, the price of raw
er variable factors. Glove silk, on the other hand,
mes which are not well adapted to the use of cotton,
are very costly and require high-priced workers to
ence practically all of the glove-silk production is by
large corporations; in fact, the largest knit-goods
United States, capitalized at $15,000,000, is primarily
of glove-silk garments. Sweaters, ties, and novelties,
ass of goods known as knit outer wear, are more often
mall concerns operating 10 to 20 machines, and using
silk. Such products are less standardized than hos-
d underwear and frequently require more handwork
ation of the machines.

distribution.—The leading States, in order of quantity
rding to the census of 1919, are: Pennsylvania, Mas-
Jersey, Wisconsin, and New York for hosiery; and
Massachusetts for underwear. Most of the concerns
ter wear and neckties are in Brooklyn, New York City,
nia. The greatest number of full-fashioned hosiery
lk hosiery are in Philadelphia.

duction and consumption.—The growth of the silk knit
, according to the quintennial census reports, has been
ensational. The total product amounted to $977,915
3,708 in 1909, $41,384,530 in 1914, and $204,026,827
igures include knit fabrics for 1914 valued at $2,738,932
t $6,437,000. The increased activity was particularly
outer-wear industry included under the census classi-
y knit goods [36] and sweaters," which attained a mag-
$40,000,000 in 1919, as compared with [37] $303,510 in
enomenal growth of this branch of the industry is not
decreased imports, for these have never equaled in a
age of one month's domestic production, but of the
popular favor for sports clothes. Year by year the
ater is extended. Once considered by fashion a utility
ports only, it has gradually assumed a more varied
oman's wardrobe and has evolved into a decorative
ng worn frequently for the color note that can thus be
o a costume. This has resulted in the desirability of
ny such garments instead of one. Scarfs of stripes
rs, so popular during the last few years, have become
ndard and accepted articles of apparel as the sweater.
atest developments is the knitted dress. Little knit
men is made of silk.

is the most important item included in silk knit goods.
e scarcity and high price of good lisle hose during the
ired a popularity which does not seem likely to wane.
he figures recorded in the census shows that in 1904 the
industry was practically in its infancy, the output
less than 50,000 dozen pairs valued at about one-half
s. In the 10 years from 1904 to 1914 it had attained
importance, the output amounting to 8,710,209 dozen

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ted.
l other" products, Table 19, p. 54.
"All other" less "thread, yarn, etc."

9,981,695. In 1919 this increased to 17,204,000 at $128,126,000, exclusive of artificial silk hosiery, mparison with former censuses should be added, 18,791,000 dozen pairs at a value of $134,770,000. of labor stringency and as most mills experienced ng materials and equipment even this increased tirely satisfy the demand. Since 1914 the full- ndustry has become almost exclusively silk and the is increasing silk production. The proportion of duced in the seamless industry is liable to more fluctuation than in the full-fashioned because the much greater proportion to the whole. As the s, more seamless silk hosiery is produced, provided t greater, because the more nearly the cost of cotton he cost of silk the more profitable it is to use the In 1914 silk hosiery amounted to 70 per cent of knit goods, but in 1919, because of the more rapid rwear industry, to only 63 per cent of the total. nd use of silk knit underwear have been largely velopment of warp knit fabrics. Little rib-knit uced in this country at the present time, but silk women, made of tricot and milanese fabrics, cut same manner as similar garments of woven cloth, de market.[32] The value of silk underwear manu- nounted to $13,747,000 as compared with $2,808,- increase in the value of silk gloves produced fference between $4,683,479 in 1914 and $13,915,-

port statistics of silk knit goods were published of Commerce before January, 1922, but exports ed at $584,090 are recorded for the first quarter, kinds of silk knit goods for the same period were an figures show that imports from the United and stockings were, for the year ending March 31, 82,689; for 1920, at $759,381; and for 1921, at mport statistics of silk knit goods are given in 50 per cent of the total quantity, which consists came from the United States.

FOREIGN PRODUCTION.

he production of silk knit goods in foreign countries judging from trade figures France and Germany e largest producers prior to the war with Switzer- since. French exports amounted to a value of falling to $1,625,643 in 1917.[34] nit goods from France during the last four years ove and below those of 1913, but the indications ably larger quantity was exported in 1920 than in ies of goods exported or imported are recorded by

he increased use of silk underwear, especially that made of the glove silk me instances exceeded the production of manufacturers. Thousands of new een reported opened in new territories throughout the United States where e been unused." (Mid-Year Report of the Silk Association of America, 1921.)

ar, 1917 at 17.37 cents—1 franc, average for the year from monthly exchange Reserve Board.

ı statistics,[35] and the values are based upon an official
rvals from the actual average values during the pre-
Neither quantities nor values, therefore, are directly
ı American statistics, but the quantities for one year
with those for another and would more or less indicate
French trade. All silk knit goods exported in 1913
5,180 kilograms and for the first six months of 1920
ams—considerably greater than half the exports for
est proportion of increase was in silk gloves and the
abrics in the piece, but the largest actual increase was
rel—probably silk hosiery, which the French make in
le. Exports of ornamented silk knit goods showed a
›ared with 1913, but a very great increase as com-
years from 1917 to 1919. In fact, exports for 1920
ıe over the three previous years in every class except
ıis item is subject to frequent variations, but at most
very small as compared to the output of the American
most important item exported is "other articles,
ng apparel." This amounted to 123,449 kilograms in
7 kilograms for the first six months of 1920. The 1913
d at par equaled $3,192,391 and the value for the six
20, converted at $0.07631/2, equaled $944,515. This
erably lower unit value when converted into dollars,
imulate purchasing.
are skilled knitters and produce goods of superior
he industry has been more or less dependent upon
knitting machines and for needles. Since the war,
ch machine builders and needle manufacturers have
special efforts to supply the needs of the industry.
for its silks, is the center of fancy silk knit goods manu-
stockings are made at Aube and Herault and jersey at

States receives more silk knit goods from France, but
important factor in the world trade, her total exports
g been valued at about $3,000,000. Great Britain,
ıa-Hungary, Canada, and Russia were the best cus-
he same years Swiss exports of silk knit goods were
ewhat over $1,000,000, and in 1919 at about $4,500,000,
rt consisting of articles other than hosiery or gloves.
tates received only a small proportion.
ial trade statistics do not show any exports of silk knit
cause of the lack of interest concerning it in the British
s and because British imports into Canada are much
those from the United States, it is inferred that this
industry is unimportant in England.

IMPORTS.

›ods brought into this country from abroad have always
nly a fraction of the domestic consumption. There is
from statistics as to the value of any one class of knitted
ed. From interviews with examiners in the Appraisers'

ds, the unit of measure is the kilogram.

alued at $29,981,695. In 1919 this increased
airs, valued at $128,126,000, exclusive of artifici
or strict comparison with former censuses sho
the totals 18,791,000 dozen pairs at a value of
as a period of labor stringency and as most mi
ty in securing materials and equipment even
did not entirely satisfy the demand. Since
ed hosiery industry has become almost exclusiv
ss industry is increasing silk production. Th
cotton produced in the seamless industry is
nt and rapid fluctuation than in the full-fashio
al cost is a much greater proportion to the
f cotton rises, more seamless silk hosiery is pro
e in silk is not greater, because the more nearly
pproaches the cost of silk the more profitable
r material. In 1914 silk hosiery amounted
ue of all silk knit goods, but in 1919, because
of the outerwear industry, to only 63 per cent
character and use of silk knit underwear
d by the development of warp knit fabrics.
ear is produced in this country at the prese
arments for women, made of tricot and mil
aped in the same manner as similar garments
ttained a wide market.[32] The value of silk
d in 1919 amounted to $13,747,000 as compa
1914. The increase in the value of silk
ted to the difference between $4,683,479 in
1919.

rts.—No export statistics of silk knit goo
Department of Commerce before January
hosiery valued at $584,090 are recorded for
ports of all kinds of silk knit goods for the
1.[33] Canadian figures show that imports
of silk socks and stockings were, for the yea
alued at $382,689; for 1920, at $759,381
12. Swiss import statistics of silk knit
and, in 1919, 50 per cent of the total quan
of hosiery, came from the United States.

FOREIGN PRODUCTION.

tatistics for the production of silk knit goo
ailable, but judging from trade figures
ave been the largest producers prior to
close rival since. French exports am
,549 in 1913, falling to $1,625,643 in 19
orts of silk knit goods from France dur
luctuated above and below those of 19
t a considerably larger quantity was e
The quantities of goods exported or in

her high mark is the increased use of silk underwear, es
e calls for this in some instances exceeded the production
r this wear have been reported opened in new territories
andise has heretofore been unused." (Mid-Year Report of
denda, p. 58.
ures converted at par, 1917 at 17.37 cents=1 franc, avera
lished by Federal Reserve Board.

ling to this
were quoted
as was to be
e curtailed in
w-silk market,
ie Knit Goods
silk stockings,
were offered in
price of 1915
l given in the
v a comparison
ll-fashioned silk
per dozen pairs;
irs; 1920, $14.50;
)20, $16.50.
ry than are con-
dly, in which the
50 in 1914.
Philadelphia during
rresponding rise in
w any comparisons.
silk half hose were
October, 1920, the
and, tram-silk boot
the same period. A
ctober, 1920, brought

present much diversi-
ent in the acts of 1890,
f 1894 and 1913. The
ports which, while never
on to tariff fluctuations,
ss conditions. Imports,
e smaller in every year
der the act of 1891, when
-year period during which
e of 60 per cent, imports
2,157 in 1907. The low
sion in that year which was
1906 and 1907. Following
chases from abroad declined
that the full effect of the
fter a slight rally in 1910
the succeeding years, and in
)9, amounted to only $250,794
ntering at a lower rate of duty
nly $181,135. From 1914 to
it goods were brought into the
f origin, chiefly Germany and
supply them. Apparently the

Stores at the port of New York it seems that hosiery and outerwear constitute the larger part of the silk knit goods imported. The amount of underwear imported is very small and usually the ribbed type of garment. As the American silk gloves are considered superior to the foreign, very few are brought into the country, and as yet practically no silk fabrics in the piece have been imported.

The hosiery imported during the past few years has been almost entirely from France, with occasional shipments from England. These French stockings are almost without exception very fine goods, usually 44 gauge (44 needles to the inch), little if any of which is made in this country. Of late some German goods have been arriving; these are similar to the French in quality but are invoiced at considerably lower prices.

Openwork or lacework on hosiery and other knit garments is a favorite form of ornamentation. The production of this work involves considerable modification in the machine and a greater labor element, hence it is not particularly adapted to the American industry. This phase has received special attention in Chemnitz and quantities of hosiery, cotton and silk, having lace designs in the instep have been imported for sale during the summer of 1921. These are dutiable as lace articles and the values imported would not appear in the statistics for silk knit goods. The American openwork hosiery consists of that cut from striped openwork tricot fabric, but elaborate lace designs are practically all made in Germany or France, the cheaper grades probably in Germany. Some very high priced French hosiery has insets of handmade lace. Outerwear consists chiefly of sweaters and scarfs from Switzerland and England. This branch of the industry has made enormous strides in this country during the last few years, and although the increase in domestic production did not replace imports, or rather far exceeded any difference in imports, there is a strong probability that imports will tend to increase somewhat with the stabilization of industry in the countries equipped for this line of manufacture for the same reasons that the domestic industry has increased many fold. The development of the silk knit goods industry is the result of greater demand and not of any war time shortage of foreign goods.

For the 30-year period, 1891–1920, the value of silk knit goods imported averaged annually $412,575 with an average duty of $241,690. Imports for 1921 were far below this average, amounting to only $164,017. Notwithstanding an unchanged rate of duty from from 1898 to 1913, the amount of foreign goods received was rather variable from year to year, ranging from $200,800 to $750,000, except in 1907, when imports were valued at $1,472,157, about twice as much as in any year during the previous decade or in any year since. In 1913 the rate was reduced to 50 per cent, but imports have since been negligible as they normally came from the countries which have been disturbed by war conditions.

PRICES.

The War Industries Board study of silk prices (Table 23, p. 57) gives average annual prices on five grades of silk hosiery for 1913–1918, but the descriptions are not sufficiently detailed to identify the classes for comparison during succeeding years. However,

< hose, standard quality, which according to this
ed $22.125 per dozen pairs in 1918, were quoted
ometimes more in 1919. Silk hosiery, as was to be
ause buying of luxuries would soonest be curtailed in
ssion, and because of the break in the raw-silk market,
grade of hosiery to decline sharply. The Knit Goods
:s that ladies' standard full-fashioned silk stockings,
n 1920 brought $32.50 per dozen pairs, were offered in
)r $13.50, still approximately twice the price of 1915
Quotations from a representative mill given in the
1920) issue of the same journal, show a comparison
, mill's prices for 1914 and 1920 on full-fashioned silk
)llows: Pure silk, 8-strand, 1914, $5.25 per dozen pairs;
ire silk, 10-strand, 1914, $7 per dozen pairs; 1920, $14.50;
-strand, 1914, $7.25 per dozen pairs; 1920, $16.50.
dently represent lower grades of hosiery than are con-
the War Industries Board price study, in which the
)men's hose quoted were priced at $11.50 in 1914.
strike in the full-fashioned mills of Philadelphia during
:casioned a shortage in silks with a corresponding rise in
w quotations are available which show any comparisons.
'oods Bulletin [36] states that 10-thread silk half hose were
$4.50 to $5 in October, 1921, while in October, 1920, the
price had been $6. On the other hand, tram-silk boot
ncreased somewhat in price during the same period. A
20-inch boot which sold for $7.25 in October, 1920, brought
3.50 a year later.

TARIFF HISTORY.

ff history of silk knit goods does not present much diversi-
ie rate changing only from 60 per cent in the acts of 1890,
1909 to 50 per cent in the acts of 1894 and 1913. The
ad apparently little effect upon imports which, while never
ied considerably, but not in relation to tariff fluctuations,
rather the general trend of business conditions. Imports,
utiable at only 50 per cent, were smaller in every year
: act of 1894 than in any year under the act of 1891, when
iad been 60 per cent. In the 16-year period during which
of 1897 and 1909 provided a rate of 60 per cent, imports
rom $199,919 in 1900 to $1,472,157 in 1907. The low
ior 1900 reflect a business depression in that year which was
by a rising period, culminating in 1906 and 1907. Following
ncial panic in the fall of 1907, purchases from abroad declined
, although it was not until 1909 that the full effect of the
it depression was apparent. After a slight rally in 1910
: declined considerably during the succeeding years, and in
ie last year under the act of 1909, amounted to only $250,794
ie imports for 1914, although entering at a lower rate of duty
th e last nine months, were only $181,135. From 1914 to
a quantities of foreign silk knit goods were brought into the
market as the countries of origin, chiefly Germany and
re not in a position to supply them. Apparently the

1, p. 126.

stic manufacture of silk knit goods has suffered but little from ncursion of foreign-made articles.

ports for 1910 were about 10 per cent of the domestic production own by the census of 1909, which gave figures for hosiery and rwear only. The prodigious growth of the home industry and ecline in imports left only a very small proportion of the do- c market supplied by foreign silk knit goods in 1914. The ıt of silk hosiery and underwear as shown by the Federal census ased from a value of $4,584,708 in 1909 to $32,779,609 in 1914, o $141,873,000 in 1919. More complete returns in 1914 show oduction of silk knit goods, exclusive of fabrics, valued at 45,598, while imports amounted to only $181,135, or 0.47 per f the American output. An even greater divergence is apparent 19 with a production of $228,398,000 and imports of $29,080.

nce, foreign competition is not a disturbing factor in the silk goods trade unless imports are concentrated in some particular of goods which competes with a similar class made in this coun- Evidence of this can not be obtained from import statistics are not subdivided, and, in fact, the decline in imports, not- tanding a greatly increased consumption, seems to indicate that is no definite part of the domestic market so supplied.

COMPETITIVE CONDITIONS.

erica is the largest user of raw silk, and silk throwing is an ished industry. It is probable, however, that the cost of ing silk in this country is slightly greater than in Europe. stic plants are as well equipped and domestic labor as efficient eign. Wages, it is true, are higher, but this is not necessarily dicap, as many manufacturers themselves recognize when they e maintaining wages as high as is compatible with selling prices. r wages, which are not peculiar to this industry, but general ghout the country, increase the purchasing power of a very class, thus providing the manufacturer of luxuries, such as silk y, with a wider market for his product. Of course, America the same time a possible market for foreign goods made with er labor in countries where, because of the low wages received e workers, the market is restricted to a more limited class.

STATISTICAL MATERIAL.

TABLE 19.—*Silk knit wearing apparel—Production in United States.*

[From Federal Census.]

Varieties.	1904		1909	
	Quantity.	Value.	Quantity.	Value.
zen pairs):				
mixed	[1] 42,065	[1] $522,303	[1] 434,414	[1] $3,600,416
	([2])	([2])	([2])	([2])
tal	[1] 42,065	[1] 522,303	[1] 434,414	[1] 3,600,416
e (dozen pairs):				
mixed	([2])	([2])	([2])	([2])
	([2])	([2])	([2])	([2])
tal	([2])	([2])	([2])	([2])
tal hosiery	42,065	522,203	434,414	3,600,416

[1] Includes silk half-hose. [2] Not reported separately. [3] Included in silk hose.

nit wearing apparel—Production in United States—Continued.

arieties.	1904		1909	
	Quantity.	Value.	Quantity.	Value.
ɜn):				
	16,045	$305,410	56,022	$709,074
	(4)	(4)	(4)	(4)
	16,045	305,410	56,022	709,074
ɜn):				
	6,810	150,202	10,977	239,218
	(5)	(5)	(5)	(5)
	6,810	150,202	10,977	239,218
	22,855	455,612	66,999	948,292
ɜzen)		(6)		(6)
		(6)		(6)
		(6)		(6)
		977,915		4,548,708

Varieties.	1914		1919	
	Quantity.	Value.	Quantity.	Value.
	2,354,648	$13,851,251	1,848,554	$21,599,428
	2,786,459	6,940,959	10,575,741	79,070,053
	5,141,107	20,792,210	12,424,295	100,669,481
ɜ):				
	1,305,792	4,701,969	1,080,825	6,851,906
	2,263,310	4,298,502	3,699,893	20,604,774
	3,569,102	9,000,471	4,780,718	27,456,680
	8,710,209	[8] 29,971,695	[7] 17,204,013	128,126,161
lozen):				
	69,786	1,214,609	85,852	1,404,231
	43,118	313,439	274,084	1,640,054
	112,904	1,528,048	359,936	3,044,285
lozen):				
	31,714	886,248	49,388	1,313,131
	29,895	393,618	432,677	9,389,705
	61,609	1,279,866	482,065	10,702,836
ɜar	174,513	2,807,914		13,747,121
(dozen)		[9] 4,683,479	2,307,805	13,915,321
		[9] 2,738,932		6,437,000
		[10] 1,182,510		41,801,224
		41,384,530		204,026,827

ɜ shirts and drawers.
ɜ combination suits.
ɜrately from other fibers.
artificial silk hosiery previously included with silk. Production, 1919: Hose, 741,000 $3,738,000; half-hose, 546,000 dozen pairs, value $2,906,000.
14 value of hosiery returned under "Silk manufacturers."
ed from Table 22 under "Silk industry."
00 value of thread, yarn, etc., for sale.

—Silk knit wearing apparel—Hosiery production in United States, by States.

[From Federal Census.]

tes.	1904		1909		1914		1919	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
	Doz. prs.		*Doz. prs.*		*Doz. prs.*		*Doz. prs.*	
vania	21,035	(2)	145,497	$1,190,405	1,990,922	$7,978,512	1,212,464	$10,719,081
in	(1)	(2)	77,600	(1)	557,086	2,825,526	536,391	5,462,853
sey	(1)	(2)	(1)	(1)	368,193	2,724,928	96,380	1,735,515
rk	(1)	(2)	(1)	(1)	195,392	1,794,233	104,301	1,800,337
usetts	(1)	(2)	(1)	(1)	108,106	1,117,963	152,898	1,846,853
r	21,030		211,317	2,410,011	440,741	2,112,058	826,945	6,886,695
	42,065	$522,303	434,414	3,600,416	3,660,440	18,553,220	2,929,379	28,451,334
osiery:								
vania					4,066,978	8,545,682	8,468,165	63,831,934
usetts					405,295	727,283	2,496,236	9,007,470
sey					119,372	468,195	1,488,466	11,968,972
in					144,297	437,245	370,952	2,289,023
rk					302,217	974,053	451,682	6,019,973
r					974,053	302,217	999,958	6,556,843
	(2)		(2)		5,049,769	11,239,461	14,275,459	99,674,215
total	42,065	522,303	434,414	3,600,416	8,710,209	[4] 29,792,681	17,204,838	128,125,549

in "all other States."
given by States.
with silk.
include hosiery to the value of $179,014 reported by establishments engaged primarily in other

—Silk knit wearing apparel—Underwear production in United States, by States.

[From Federal Census.]

ates.	1904		1909		1914		1919	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
awers:	*Dozen.*		*Dozen.*		*Dozen.*		*Dozen.*	
York	6,270	(1)	12,639	$359,108	53,603	$946,719	29,690	$783,681
r	9,775	(1)	43,383	349,966	16,183	267,890	56,162	620,550
	16,045	$305,410	56,022	709,074	69,786	1,214,609	85,852	1,404,231
d—								
achusetts					25,280	202,519	92,141	726,638
r					17,838	110,920	181,943	913,416
tal	(2)	(2)	(2)	(2)	43,118	313,439	274,084	1,640,054
tal shirts and rawers	16,045	305,410	56,022	709,074	112,904	1,528,048	359,936	3,044,285
suits:								
l)	6,810	150,202	10,977	239,218	31,714	886,248	49,388	1,313,131
d—								
achusetts					18,651	301,573	189,543	4,192,733
r					11,244	92,045	243,134	5,196,972
tal	(2)	(2)	(2)	(2)	29,895	393,618	432,677	9,389,705
tal combination suits	6,810	150,202	10,977	239,218	61,609	1,279,866	482,065	10,702,836
tal underwear	22,855	455,612	66,999	948,292	174,513	2,807,914	842,001	13,747,121

[1] Value not given by States.

[2] Included with silk.

—Silk knit goods—Imports for consumption—Revenue.

	Rate of duty.	Value.	Duty collected.	Actual and computed ad valorem rate.
				Per cent.
	60 per cent ad valorem	$695,834	$401,596	57.71
	do	837,816	502,739	60.00
	do	924,049	554,547	60.01
	do	495,161	297,098	60.00
	do	27,609	16,656	60.00
	50 per cent ad valorem	388,110	194,055	50.00
	do	340,389	170,195	50.00
	do	217,766	108,833	50.00
	60 per cent ad valorem	13,021	6,510	50.00
	do	286,596	171,957	60.00
	do	280,230	168,138	60.00
	do	199,919	119,951	60.00
	do	269,789	161,873	60.00
	do	315,782	189,469	60.00
	do	754,811	452,887	60.00
	do	529,038	317,423	60.00
	do	541,383	324,830	60.00
	do	733,716	440,228	60.00
	do	1,472,157	883,292	60.00
	do	786,065	471,639	60.00
	do	376,566	225,939	60.00
	do	456,757	274,054	60.00
	do	291,811	175,087	60.00
	do	201,741	121,045	60.00
	do	250,794	150,477	60.00
	do	50,588	30,352	60.00
	50 per cent ad valorem	130,547	65,273	50.00
	do	112,151	56,076	50.00
	do	77,538	38,769	50.00
	do	121,358	60,679	50.00
	do	60,574	30,287	50.00
	do	29,080	14,540	50.00
	do	108,500	54,250	50.00
		412,575	241,690	58.58
	do	164,017	82,008	50.00

TABLE 23.—*Wholesale prices per dozen, silk hosiery.*

[From War Industries Board Price Bulletin 25.]

ar.	Men's half hose.		Women's hose.		
	Silk all the way through.	Cotton top.	Cotton feet, silk top.	Medium priced, silk all the way through.	All silk, standard quality.
	$[illegible]	$4.2500	$11.5000	$12.0000	$15.5000
	[illegible]	4.2500	11.5000	12.0000	15.5000
	[illegible]	4.2500	11.5000	12.0000	15.5000
	[illegible]	4.3125	12.1875	12.0000	16.1875
	[illegible]	4.3125	13.7917	12.6667	17.7916
	[illegible]	4.4250	15.0417	16.1667	22.1250

Silk knit goods—Rates of duty.

ct of—	Par.	Tariff classification or description.	Rates of duty, specific and ad valorem.
1890	413	* * * clothing ready-made, and articles of wearing apparel of every description, including knit goods, made up or manufactured wholly or in part by the tailor, seamstress, or manufacturer, composed of silk, or of which silk is the component material of chief value, not specially provided for in this act,	60 per cent ad valorem.
		Provided, That all such clothing ready made and articles of wearing apparel when composed in part of India rubber (not including gloves or elastic articles that are specially provided for in this act), shall be subject to a duty of—	8 cents per ounce, and in addition thereto 60 per cent ad valorem.
1894	301	* * * clothing ready-made, and articles of wearing apparel of every description, including knit goods made up or manufactured wholly or in part by the tailor, seamstress, or manufacturer, composed of silk, or of which silk is the component material of chief value, and beaded silk goods, not specially provided for in this act,	50 per cent ad valorem.
1897	390	* * * clothing ready-made, and articles of wearing apparel of every description, including knit goods, made up or manufactured in whole or in part by the tailor, seamstress, or manufacturer; all of the above-named articles made of silk, or of which silk is the component material of chief value, not specially provided in this act, and silk goods ornamented with beads or spangles, of whatever material composed,	60 per cent ad valorem.
		Provided, That any wearing apparel or other articles provided for in this paragraph (except gloves) when composed in part of India-rubber, shall be subject to a duty of—	Do.
1909	402	* * * clothing ready-made, and articles of wearing apparel of every description, including knit goods, made up or manufactured in whole or in part by the tailor, seamstress, or manufacturer; all of the foregoing composed of silk, or of silk and metal, or of which silk is the component material of chief value, whether in part of India rubber or otherwise * * * not specially provided for in this section, * * *	60 per cent ad valorem.
		Provided, That articles composed wholly or in chief value of any of the materials or goods dutiable under this paragraph shall pay not less than the rate of duty imposed upon such materials or goods by this section,	
1913	317	Clothing ready-made, and articles of wearing apparel of every description, including knit goods, made up or manufactured in whole or in part by the tailor, seamstress, or manufacturer: all the foregoing composed of silk or of which silk or silk and India rubber are the component materials of chief value, not specially provided for in this section,	50 per cent ad valorem.

(For Court and Treasury decisions, see Silk wearing apparel.)

ADDENDA.

Imports for consumption and domestic exports of silk wearing apparel and silk small wares for the first quarter of 1922—Value.

	Exports.	Imports.
Silk wearing apparel:		
Hosiery	$584,090	[1] $93,081
Underwear	16,514	539,093
Blouses, dresses, and skirts	280,923	
Other silk wearing apparel	96,184	
Handkerchiefs	2,384	[2] 112,889
Ribbons	175,488	103,514
Small wares	43,317	35,838

[1] Includes silk knit goods other than hosiery.
[2] Exclusive or ornamented silk handkerchiefs, valued at $4,543.

[redacted]

NITED STATES TARIFF COMMISSION
WASHINGTON

F INFORMATION SURVEYS

ON THE ARTICLES IN

GRAPHS 293, 294, 295, 296, 297, 298, 299 300, 301, 302, AND 303 OF THE TARIFF ACT OF 1913

ND RELATED ARTICLES IN OTHER PARAGRAPHS

CARPETS AND RUGS OF WOOL

3:
n, Axminster, moquette, enille carpets
4:
Wilton, and Tournay carpets
95:
s carpets
96:
and tapestry velvet carpets
97:
y Brussels carpets
298:
ingrain, three-ply, and all-n Venetian carpets
299:
Dutch and two-ply ingrain ets

Paragraph 300:
Carpets woven whole for rooms, and oriental, Berlin, Aubusson, Axminster and similar rugs

Paragraph 301:
Druggets and bockings

Paragraph 302:
Carpets of wool or cotton, or either, not specially provided for, and mats, matting, and rugs of cotton. (For cotton carpets, etc., see par. 272)

Paragraph 303:
Mats, rugs for floors, screens, covers, hassocks, bed sides, art squares, and other portions of carpeting not specially provided for

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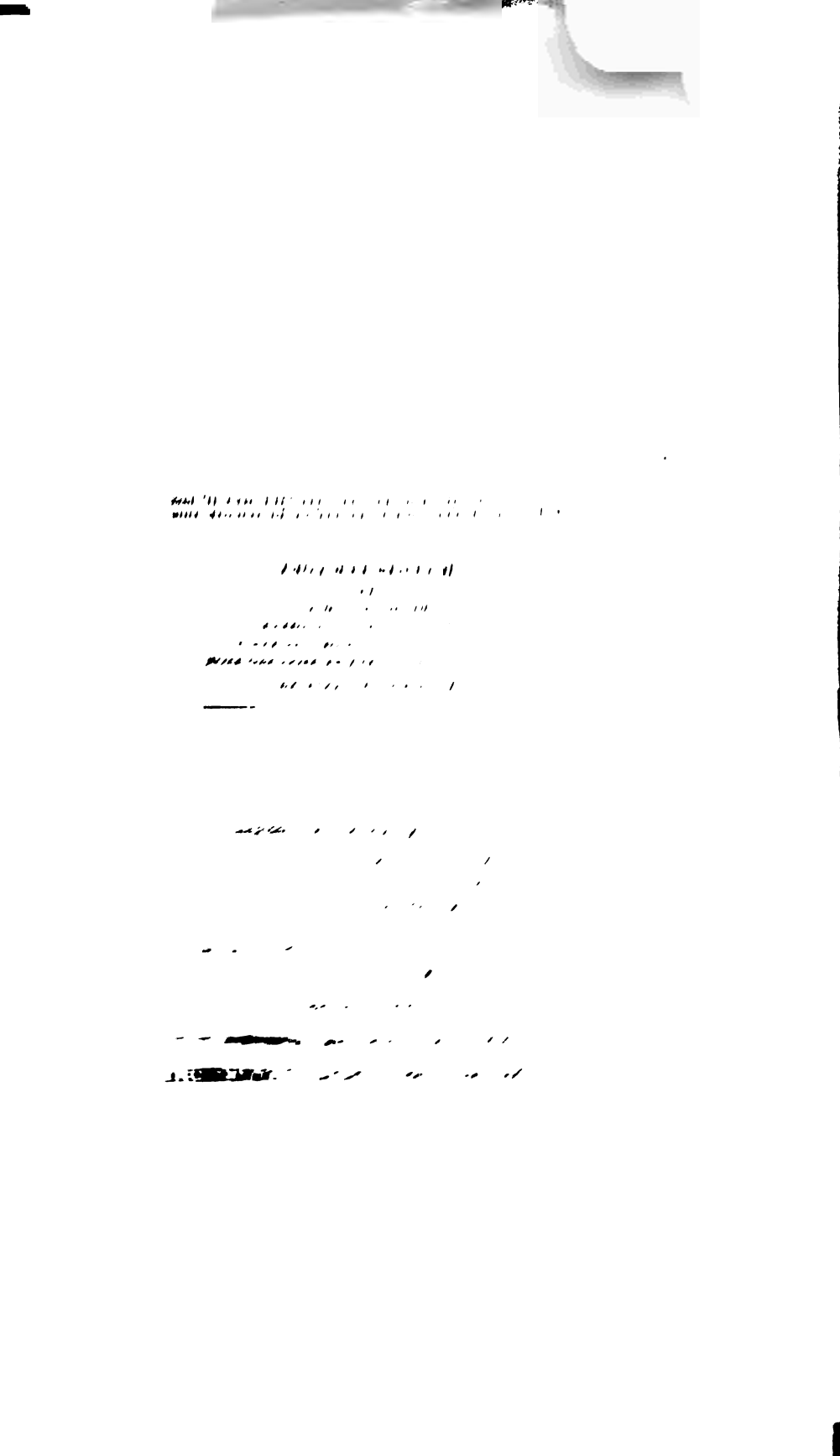

PREFACE.

› of a series of Tariff Information Surveys prepared by States Tariff Commission and transmitted to the Com-ays and Means. The series covers all of the articles and provided for in the tariff act of October 3, 1913, and ›ecifically provided for. It is arranged in the numerical agraphs of that act.

ases two or more paragraphs have been combined in one In doing this, industrial relationship of the articles has ›d when possible. In those instances where a paragraph reated under a preceding paragraph of the tariff act, › made to this fact at the point where the paragraph numerical order. Where one grade of an article is dutiable ›r grade of the same article is on the free list, the article d under the dutiable paragraph, which appears first in order in the tariff act. In certain instances articles of ›trial relationship and which occur in separate paragraphs iff act have been combined under one paragraph for con-›f discussion. Reference is made to this fact at the point commodities would naturally occur in numerical order.

›t pamphlet in the series is an "Introduction and Index," ›tains:

ntroductory chapter discussing the scope of the series and al method of treatment.

alphabetical index of the articles provided for in the tariff 13, showing the paragraph of the act in which the article ed for and, if discussed under a different paragraph, the ›f such paragraph.

›st of the pamphlets in the series, showing the paragraphs ›les included in each pamphlet.

›y use of this "Introduction and Index," the exact location iscussion relating to a given article or commodity can be ›ed.

› preparation of this report the Tariff Commission had the of Joseph B. Hubbard, Arthur H. Cole, and (in the revision) . R. Edminster, of the textile division of the commission's . Cochran Fisher, of the accounting division, and of others.

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CARPETS AND RUGS OF WOOL.

TARIFF ACT OF OCTOBER 3, 1913.

[Text of Schedule K providing for carpets and rugs of wool.]

busson, Axminster, moquette, and chenille carpets, figured or plain, or carpeting of like character or description, 35 per centum ad valorem.
xony, Wilton, and Tournay velvet carpets, figured or plain, and all eting of like character or description, 30 per centum ad valorem.
ussels carpets, figured or plain, and all carpets or carpeting of like escription, 25 per centum ad valorem.
elvet and tapestry velvet carpets, figured or plain, printed on the warp and all carpets or carpeting of like character or description, 30 per centum

apestry Brussels carpets, figured or plain, and all carpets or carpeting ter or descripton, printed on the warp or otherwise, 20 per centum ad

reble ingrain, three-ply, and all-chain Venetian carpets, 20 per centum

Wool Dutch and two-ply ingrain carpets, 20 per centum ad valorem.
Carpets of every description, woven whole for rooms, and Oriental, Berin, Axminster, and similar rugs, 50 per centum ad valorem.
Druggets and bockings, printed, colored, or otherwise, 20 per centum ad

Carpets and carpeting of wool or cotton, or composed in part of either of pecially provided for in this section, and on mats, matting, and rugs of er centum ad valorem.
Mats, rugs for floors, screens, covers, hassocks, bed sides, art squares, and ns of carpets or carpeting, composed wholly or in part of wool, and not rovided for in this section, shall be subjected to the rate of duty herein carpets or carpeting of like character or description.

SUMMARY AND CONCLUSIONS.

s covered.—This report covers wool carpets and rugs. These ified (1) into hand and machine made products, (2) according ype of the weave, and (3) into carpets or roll goods, seamed d seamless rugs. Carpets and rugs are not made by hand United States; the handmade articles are imported chiefly e Orient, and to some extent also from continental Europe eat Britain. The types of machine-made products bear the own names of Brussels, Wilton, Axminster, and others. f these applies to a particular weave. All wool carpetings, ingrain, are pile fabrics, and each of these names signifies a method of inserting the pile. Insertion by knotting the pile around the warp threads by hand is the oriental method. ne-made carpets imitate the oriental in various ways. A newly ed power loom produces an exact imitation of the oriental ; this product is to be considered a type in itself. The pile of ls and Wilton is formed of warp threads, and is obtained by ng these over wires which are later withdrawn, leaving the pile ng above the backing of the fabric. The difference between

the two is that the pile in the case of Brussels remains in a looped condition, while in the Wilton the loops are cut when the wires are withdrawn. Colored patterns in these two weaves are obtained by selection of the variously dyed warp threads in accordance with the color demanded by the design. Tapestry and velvet are imitations of Brussels and Wilton. The weave is the same as for the latter types, but the pattern is obtained, not, as for them, by the use of a number of warp threads each dyed a single color, but by the use of warp threads each dyed in sections with the various colors necessary to form the pattern. The Axminster is a close imitation of the oriental weave, in that the pile threads are inserted in the fabric and are not formed from the warp; it differs from the oriental in the fact that the pile is not knotted to the warp threads but inserted around a filling thread and bound in by additional filling threads.

The pile of the chenille Axminster differs from the Axminster in being formed of threads bound together by a weaving process prior to the rug weaving. The Smyrna is somewhat similar to the chenille Axminster. Ingrain is simply double and triple woven cloth. Some cloths other than ingrain are used for floor coverings. With the exception of Smyrna, which is woven only as a seamless rug, and chenille Axminster and ingrain,[1] made only as carpets and seamless rugs, these types are all woven in the three forms—rolled goods, seamed rugs, and seamless rugs.

Raw materials.—Wool forms the most important raw material; yarns of a wide variety of other fibers, including cotton, jute, flax, and sometimes silk, also are used. The wools required must be of superior strength of fiber, long, lustrous, and straight, and because of the use to which they are put they must be cheap. As wools raised in the United States do not meet these requirements, all of the carpet wools are imported. Prior to the war China, the United Kingdom, Russia, Turkey, and Argentina were the principal sources of importation. Next in importance to yarns as raw materials come dyestuffs. These also must meet peculiar requirements because of the use to which the finished product is put; they must be extremely fast to light and alkaline street dirt, but need not be fast to water to the degree required, for example, of dress goods.

Production.—In 1919 the United States produced 52,173,000 square yards of wool carpeting, valued at $110,116,000; in 1914, 66,340,274 square yards, valued at $69,128,185. These were both depressed years in the trade. In 1909 production had amounted to 81,218,881 square yards, valued at $71,188,152. Earlier figures indicate a comparatively slow growth since 1900.

In 1919, 28 per cent of the yardage produced was Axminster, 21 per cent Brussels and tapestry, 28 per cent Wilton and velvet, and the remaining 23 per cent principally wool and paper fiber usually made on ingrain looms. Since 1900 there has been a marked tendency for ingrain production, other than the relatively new wool and fiber goods, to decrease and for Axminster production to increase; during the same period the production of cut-pile fabrics has tended to increase and that of loop-pile to decrease. In 1919, 23 per cent of the production of all these types was rolled goods, 24 per cent seamed rugs, and 53 per cent, seamless rugs. More than half of the yardage of Wilton and Brussels and almost half of Axminster was in the form of seamed rugs, and

[1] Formerly ingrain rugs were made in appreciable numbers as "mitered" rugs. See p. 23, infra.

hree-fourths of the yardage of tapestry in seamless rugs. Only grain did roll goods account for over half of the yardage. Approximately 45 per cent of the yardage of velvet was made up as roll and slightly less as seamless rugs.

pet mills are confined almost entirely to the eastern section of nited States; New York employed the largest number of wage rs in 1919; Pennsylvania, Massachusetts, and Connecticut d next. The total number of wage earners at that time was 2.

ports for consumption.—From 1910 to 1914 yearly imports ged 1,084,620 square yards, valued at $4,305,149. By far the t number of these were handmade rugs, largely from the Orient; igh not accurately indicated by the figures, it may be estimated approximately 80 per cent were of this description. The next ears, which include the period of the European war, show a decrease; yearly imports averaged only 743,059 square yards, d at $2,725,204. This decrease is marked in the case of handmade machine-made products show an actual increase because of r importations during the first three years of this period. A ery in imports began in the middle of 1919. In 1920 they ased to 1,002,812 square yards; in 1921 to 1,384,388 square

ports, although large in themselves, are only a small percentage oduction. For the calendar year 1914, for instance, imports of ine-made carpetings are estimated to have been 0.7 per cent of quantity produced in this country and 0.95 per cent of its value.[2] he same year imports of all kinds of wool carpeting, including made, formed slightly over 2 per cent of the yardage produced slightly less than 7 per cent of the value.[3]

ports.—Figures for exports during recent years are not avail-

They have been small in amount and sporadic in character, ast in so far as individual countries are concerned.

mpetitive position of American industry.—The carpet industry e United States outranks that of all other countries in the amount oduct. Not only is production in itself large but the individual are of sufficient size in many instances to have the advantages ing from large-scale production. To these advantages are added resulting from the length of time the industry has been estab- l and the advantages gained from an earlier development of anism than took place in other countries. An element of strength e domestic maker has been a market with a consuming power r than that of any other nation. The domestic manufacturer's imity to this market has enabled him to fit his production to the of the American consumer, as he has done in the shift from car- to rugs through the development of wide looms.

competition with European countries, which pay a lower rate than the United States, the American producer is at est disadvantage in those products in which the labor cost forms ge percentage of the total cost. Especially are the imitation tal and the chenille Axminster disadvantageously situated in this ct. The former is produced by only one loom, recently set up in

milar estimate for the census year 1919 would show imports amounting to only 0.16 per cent of the ty produced, but this, of course, was an abnormal year.

he census year 1919 (an abnormal year), approximately 1 per cent of the quantity produced in this y.

this country; the latter meets competition from the product of a highly developed British industry. Among the other fabrics the figures indicate that Wilton (if Smyrna be omitted, which is not produced in Europe) bears the highest labor charge. There are some imports of fine Wiltons, but the American manufacturer has developed a fabric of superior quality.

Profitable hand manufacture of rugs and carpets is not possible in this country. Imported handmade rugs are, of course, used for floor coverings, and in that sense displace machine-made products. As a matter of fact the great bulk of demand for either of these products is uninfluenced by the fact that the other might be used. The purchaser of an oriental or hand-tufted rug wants an oriental or hand-tufted rug and is not to be disturbed ordinarily by considerations of price or the existence of a cheaper machine-made substitute. Only when the long wearing qualities characteristic of some hand-tufted rugs lead to investment in them, as against machine products, can they be regarded as truly competitive.

Suggested tariff paragraphs.—The 11 carpet paragraphs in the act of 1913 occupied a larger portion than is warranted by the importance of these articles, and before the passage of the act of 1922 the United States Tariff Commission suggested that only three paragraphs be used. These three paragraphs were to cover the entire range, subdivided as follows: One to cover wool carpets and rugs that are distinctive luxuries, another to include all other varieties of carpets and rugs made with the use of wool, and a third for special articles made from wool carpets and rugs. Paragraphs 1116, 1117, and 1118 in the present tariff act fully cover these three divisions.

The intent of paragraph 1116 is to include only such carpets and rugs as are distinctive luxuries. Falling within this classification are handmade carpets and rugs such as the oriental, "real" Axminster, Savonnerie, and Aubusson, and also chenille Axminsters which, although made on a power loom, necessitate a large amount of handwork and are costly goods which are in much the same class as handmade goods. There is also included "carpets and rugs of oriental weave or weaves, produced on a power-driven loom." The term "oriental weave or weaves" means woven similar to the oriental; that is, with knotted pile.

Specific duties.—Provision for carpets and rugs may be made on a specific or an ad valorem basis. The acts of 1913 and 1922 provided duties on an ad valorem basis. The two preceding acts employed compound duties. A comparison of specific and ad valorem rates on machine-made carpeting on the basis of the 1920 domestic prices is made for the three acts of 1913, 1909, and 1897, in the following table. Both specific and ad valorem equivalents of the duties are given, and the division between carpets and the two forms of rugs is made.

rem and specific rates of duty on carpets and rugs, on the basis of typical prices, July, 1920. (Acts of 1913, 1909, and 1897.)

[See pp. 118, 119, for a more detailed statement.]

Description.	Ad valorem and equivalent ad valorem rates.			Equivalent specific rates per square yard.		
	Roll goods.	Seamed rugs.	Seamless rugs.	Roll goods.	Seamed rugs.	Seamless rugs.
-frame, 256-pitch, 9-wire):	*Per cent.*	*Per cent.*	*Per cent.*			
1913	25	25	25	$1.15	$1.19	.....
1909 and 1897	49.57	49.26	.....	2.28	2.34	.....
orsted (6-frame, 256-pitch, 13½-						
1913	30	30	30	2.34	3.25	[1] 33.96
1909 and 1897	47.69	45.52	[1] 44.55	3.72	4.93	[1] 5.88
ol (5-frame, 236-pitch, 9-wire):						
1913	30	30 30	30	1.96	2.45 [2] 4.01	[2] 4.13
1909 and 1897	49.16	47.30 [2] 44.47	[2] 44.37	3.21	3.86 [2] 5.95	[2] 6.11
00-pitch, 8-wire):						
1913	20	20	20	.54	.....	.56
1909 and 1897	50.56	.....	50	1.36	.....	1.40
-pitch, 8-wire, 2-shot):						
913	30	30	30	1.09	.....	1.20
1909 and 1897	51.10	.....	49.88	1.85	.....	2.01
(6½ by 7):						
913	35	50	50 50	1.70	[2] 1.62	2.16 [2] 1.85
1909 and 1897	52.36	[2] 67.80	60.88 [2] 64.50	2.55	[2] 2.19	2.63 [2] 2.38
minster (6 rows):						
913	35	([3])	50 35	3.85	([3])	5.89 4.12
1909 and 1897	45.49	([3])	47.62 45.07	5.00	([3])	5.61 5.31

[1] rug not of specifications given. [2] Not of specifications given. [3] None made.

d valorem rates of the act of 1913 were 20, 25, 30, 35, and 50 , according to the types of carpeting. With the exception of er rugs, the ad valorem equivalents of the compound duties vo preceding acts, on the basis of 1920 domestic prices, vary ıtly from 50 per cent. The equivalent specific duties for the ts, calculated on the same basis, vary widely, of course, g to the value of the different types of rugs. As between the orms, the specific equivalent of the duty on rugs is the higher of the higher value of the rugs; the relative differences the two forms are less under the compound duties of the ;ts. For the fabrics for which the prices have been taken, luties on rugs would be higher than those on carpets (roll ı order to equal the rates of act of 1913, by the following ;es: Brussels (seamed), 3½; tapestry (seamless), 4; velvet, Wilton (seamed), 25; Axminster (seamless), 27; worsted ieamed), 39; and chenille Axminster (seamless), 53 or 7, to the classification under which it falls. Wool Wilton rugs show a duty greater than the seamed by 3 per cent; r, by 14 per cent. All the preceding differences were slightly ;h case for the acts of 1909 and 1897.

l is not available for a similar table for handmade products. under the act of 1897, the equivalent ad valorem rate pon "carpets woven whole for rooms and rugs" amounted ;er cent, and the specific equivalent to $2.57 per square ıties under the act of 1909 were the same; under that of

1913 the rate was fixed at 50 per cent ad valorem. In 1915 the application of this rate resulted in a duty of $2.12 per square yard. This has increased with the increase in price of rugs until in 1920 it amounted to $4.09.

Compensatory duty.—The proportion which the cost of wool bears to the total cost of producing rugs makes the consideration of duty on raw wool of importance. On a basis similar to that used for specific duties, it appears that a wool duty adding 50 per cent to the cost of yarns would result in an increase in price (all other costs remaining the same) as follows: Wilton, 13 to 22 per cent; Axminster and chenille Axminster, 10 to 13 per cent; velvet and tapestry, 8½ to 10 per cent. A duty adding 25 per cent to the cost of the yarns would halve the above percentages; one adding 12½ per cent would divide them by four, and other additions proportionately

Elimination of wool duties.—Under the act of 1922, it was provided that raw wool in the manufacture of rugs, carpets, or any other floor coverings shall be entered free of duty. With carpet wool free, compensatory duties were of course eliminated and the duties on wool carpets and rugs were placed on an ad valorem basis.

CHAPTER I.

DESCRIPTION.

VARIETIES AND CHARACTER OF MATERIALS EMPLOYED.

ɔt and rug industry utilizes an extraordinarily wide variety ɔers, a variety approached only by that employed in the ndustry. Disregarding the straw, grass, paper, and rags production of cheaper types of floor covering, it should be wool, cotton, flax, and jute are all employed, while in the e of a few handmade oriental rugs silk is also drawn upon. s utilized in the manufacture of carpets and rugs are, gen- ing, of a character quite distinct from the types employed branches of wool manufacture. To be sure, some small f wools that are primarily carpet wools may chance to be ly high grade to find place in cloth or blanket production; ɔnally the desire of cloth designers to produce certain for example, a rough, kempy appearance, leads to the t of a certain proportion of kempy carpet wools. On the considerations of scarcity or price may in special instances use in the carpet trade of certain wools whose primary t is in cloths, blankets, and the like; though even then west quality of such wools can be advantageously pressed

ɪties desired of carpet wools are such as to lead directly to this ɪlassification. Carpet wools must possess superior strength onsiderable luster, straightness, a fair length, and relative ɔm felting, and they must be relatively cheap in price. to these characteristics may be instanced those of the ɪl, which is the wool fiber most highly prized in the manu- ɪloths and dress goods. Carpet wools come from sheep of unimproved breeds. A representative type is the Scotch This wool is the yield from an extremely hardy but rough heep of the Scotch Highlands, the breed of which has been unchanged in many centuries. Other wools of similar ɔme from the (native) sheep of China, India, and south- ɔpe. The wool from such fleeces approaches the character his hairlike quality gives it strength, straightness, freedom g, and usually a fair length of staple. The relatively low serrations contributes luster, while the large production ɔols, together with their general unsuitableness for cloth re, renders them cheap in the world's markets. Techni- rime requisite of carpet wools is strength of staple, since feature depends the resiliency of plush or loop pile and under severe wear; economically the prime requisite is

The wool yarns employed in the carpet industry are manufactured on both the woolen and worsted principles. The manufacture of such yarns for use in the carpet industry is distinguished chiefly by its relative simplicity, as compared with the manufacture of such yarns for other purposes. The good average length and strength of staple, and the relatively low counts of yarns required, free the preparatory and spinning processes from many of the difficulties with which the manufacture of fine wool yarns is beset. Typical counts of worsted yarns for use in the carpet trade are from 10s to 20s, whereas in the cloth and dress goods manufacture they often reach 40s to 60s.[1] Typical woolen yarns for the carpet trade are equivalent to yarns in the cloth manufacture denominated 1 to 1½ run. On the other hand, the average woolen yarns actually employed in the latter industry are 3½ to 4 run, and occasionally one finds woolen yarns spun to as high as 12 or 16 run.[2] Both woolen and worsted carpet yarns are usually doubled or trebled (twisted together) before use in weaving.

The cotton, linen, and jute yarns employed in the industry are, with hardly an exception, purchased from spinners in the industries which manufacture cotton, flax, and jute, respectively. The feature of low yarn counts may be instanced by reference to the types of cotton yarns commonly employed in the carpet trade. They are rarely over 16 count, though two, three, and sometimes as many as five of these "single" yarns are twisted together to form a 2, 3, or 5 ply yarn. On the other hand, the cotton yarns produced in this country are in the main 20s to 40s, while some cotton yarns as high as 120s or 140s are used as "singles" in the weaving of fine cotton cloths.[3]

In addition to the constituent yarns, there are employed dyes, scouring materials, sizing, and other materials of lesser importance. Only dyes present any particular features. Dyes employed in the carpet industry do not need some of the qualities required of dyestuffs in other branches of the wool manufacture—for example, fastness to washing. However, it is essential that they be fast to light in an unusual degree, and to alkaline street dirt. Certain aniline dyes, especially acid dyes, possess this quality in an exceptional degree, and are widely used in the carpet industry.

Section 2. Types of Carpeting.

There are essentially but four distinct types of carpeting: (*a*) Felt carpets, (*b*) knotted-pile and imitation knotted-pile carpets, (*c*) warp-pile carpets, and (*d*) single or multi cloth carpets.

(a) Felt carpets.

This type of carpet or carpeting[4] is manufactured in the same manner as other felted goods, such as felt hats, felted blanketing and the like. The wool fibers are not spun into yarns but are matted

[1] The worsted count is based upon the number of 560-yard hanks to the pound. A pound of 10s worsted contains 10 by 560 or 5,600 yards, a pound of 20s worsted contains 20 by 560 or 11,200 yards of yarn.
[2] The woolen run system is based on the number of 1,600-yard lengths to the pound.
[3] Cotton yarn numbering is based on the number of 840-yard hanks to the pound.
[4] The term "carpeting" is not used in the trade but is convenient for including under one heading both carpets or roll goods and rugs. The single term "carpets" is employed in the trade to cover both forms of floor covering, but this practice leads to considerable confusion when it is desired to differentiate between roll goods and rugs. In this report the practice in the trade is followed except in those cases where to do so would confuse the sense of the discussion.

er by the action of moisture, heat, and pressure to
ieous and fairly substantial fabric. Felted carpets
:e a considerably thicker body of felt than do the
st named, but otherwise their manufacture proceeds
The design is printed or stenciled upon the felted

ing was not specifically mentioned in the tariff act of
metimes stated in the trade that druggets and bock-
r paragraph 301 in the act of 1913, are properly felt
ormer being printed and the other of solid color;[5] but
that these articles are of entirely different con-
t were not classed as druggets and bockings, felt car-
iave come under paragraph 302 of the tariff act of
gnet" clause, which covered carpets and carpeting of
ially provided for." [6]
ntimated, this form of floor covering was at one time
importance, both in the rug form and as border strips
rug of another type and filling the space between it
oards of the room walls. Relative cheapness was the
its favor. More recently felted carpeting has fallen
l at the present time it constitutes a negligible portion
c carpet trade.[7]

TED-PILE AND IMITATION KNOTTED-PILE CARPETS.

tion between knotted-pile and imitation knotted-pile
th one exception, the distinction between handmade
made products of the same general appearance and
[mitation" refers more to the effect than to the process
re, although in one case, that of the Axminster, there
ation of the process.

knotted-pile carpets.—The handmade knotted-pile car-
two important sections of the carpet trade, oriental
ropean hand-tufted rugs. In the former term should
the hand products not only of countries of the Near
Persia and Turkey, but also similar products of India,
ther countries of the Middle and Far East. This group
onfining its operations to the production of the finest
iandmade carpets, the industry has managed to survive,
a very limited scale. To-day it is carried on in isolated
many European countries, chiefly France, England,
ermany, Bohemia, Belgium, Holland, and Spain. In
ts the products of these workshops compare favorably
iental fabrics and of course are often vastly superior to
lower types of such goods. The only rugs of this type
nentioned in the tariff of 1913 (par. 300) were the Berlin,
n Germany, and the "real" or handmade Axminster,
i Great Britain.[8]

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gy of par. 301 of the act of 1913 lends some presumption in favor of this view. It read:
ockings, printed, colored, or otherwise."
:pretation see Treasury Decisions 1011, 3279, and 10111 (*U. S. v. Benttell*, 99 Fed., 260;

carpeting had become very small, indeed, under the duty of 50 per cent ad valorem of
and 1909, averaging less than 30 square yards per year in the period 1907–1913. Even in
ity became 20 per cent, the importation amounted to but 5,367 square yards, valued at

machine-made Axminster from which this should be carefully distinguished.

The implements and methods used in the production of oriental rugs are peculiarly simple. The weaving operation itself consists in the formation of a series of knots upon the foundation of the warp threads in such a way as to form the pile, the colors of the yarns used for this pile forming the pattern of the rug. The method of manufacturing European hand-tufted carpets differs from that employed in the Orient in no essential manner. The implements, particularly the loom, are superior, the wool yarns are probably better, designs are different, and the European weavers work almost wholly in central workshops; but the distinctive feature of the operation, the knotting of the pile, tuft by tuft, into the foundation of warp and weft, is preserved without change.

The products of both the oriental and European handicraft manufactures form a class apart among floor coverings, and a class fundamentally superior to all others. As one writer has put it:

> There is no method of combining the pile with the foundation so good as the knot, and it can not be completely imitated by the cleverest power loom invented. The hand-tufted carpet possesses an individuality * * * which no product of machine can attain, and which, after all, is an attribute of a work of art.[9]

Such articles are obviously of the class of luxuries, and inasmuch as there is no production of them in this country and as they compete only indirectly with the domestic machine-made goods, the tariff problem is quite different from that connected with the latter.

Machine-made knotted-pile carpets.—There has been set up in the United States a loom which weaves a fabric similar in structure to the oriental. A row of pile yarns is inserted between the warp threads and the knotting is obtained by mechanically transposing alternate warp threads, which are then restored to their original position. Filling (weft) threads are next inserted, and the process is repeated. This process has been commercially feasible for only a few years and the output is small. A similar fabric is likewise being produced in England and was, some years ago at least, being produced in Austria.

Imitation knotted-pile carpets.—The two types of machine-made carpets in which the action of the hand weaver, or the result of his operations, is imitated are the Axminster and the chenille Axminster. In both the structure of the finished fabric is not unlike that of the handmade article, namely, tufts of wool yarns bound into a foundation of cotton and other yarns. Another fabric, the Smyrna, is an outgrowth of the chenille Axminster method of manufacture and, although it bears little resemblance to handmade carpeting, may conveniently be included in this group.[10]

Axminster.—The Axminster carpet has borrowed its name from the handmade fabric already mentioned, but owes its origin wholly to the inventive genius of Halcyon Skinner, who, with aid from Alexander Smith, developed toward the middle of the last century a power loom for the weaving of the imitation fabric. In the method of manufacture by means of this loom, even as in the old hand process, each latitudinal row of tufts is treated as a unit; but in the machine process the whole row of tufts is inserted at one time instead of each tuft being individually knotted.

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[9] Brinton, R. S.: Carpets, London, 1920, p. 22.

[10] Axminster and chenille Axminster were covered by par. 253 in the tariff of 1913. Smyrna rugs were not specifically mentioned in that act.

lready dyed), in the number and sequence of colors complexion of a specific row of tufts, are wound wide as the fabric to be woven.[11] A series of these each other in such an order that the succeeding at colored tufts form a continuous pattern. A traveling chain which overhangs the loom, the total spools being dependent upon the number of indi- in a complete single insertion or "repeat" of the e spool required for the particular juncture in the by the moving chain directly above the shed (or p threads (already mounted in the loom), the spool he ends of wool yarns dangling from the wide spool o the apex of the warp shed and formed into a V- mmediately a double shot of filling yarn is inserted, in position; the wool yarns are severed by an auto- point near the spool and sufficiently high from the goods to leave the desired height of pile; the shed of changed to bind in the weft shots and their row of ots of filling are inserted to combine with backing d the row of tufts even more firmly; the reed of the he completed section of the goods; and the particular to give place to the next spool in the series. The repeated, and row by row the fabric is built up.

viously many differences from the hand process in the ns; and many differences in the completed articles . Particularly to be noted is the relatively small pro- yarns used in the machine product. Whereas in the he wool yarns are fixed to a foundation of relatively rns, in the machine Axminster wool yarns form only warp binder threads are of cotton; the stuffer or back- l in the warp is usually of cotton or linen, and jute r the weft or filling yarns.[12] The weight and firmness y the jute and the linen or cotton threads, and the y give the surface.

the quality of the Axminster fabric depends primarily of wool yarn used, the number of rows of tufts per inch rpwise of the goods), and the number of wool-yarn pon the spools. The first two factors mentioned are tant. Both worsted and woolen yarns may be utilized cture of Axminsters. The former makes a superior y ways, but woolen yarns, largely because of their ve come more and more into use for the purpose of elatively cheaper article to compete with the Wiltons that at the present time the American industry em- olen yarns in this type of carpet. By an increase in either rows or wool-yarn ends the density of the pile ut in the case of a greater number of rows the com- e goods is also promoted through the necessity of up by the loom to insert a greater number of rows in In an Axminster, which has 8 to 10 rows to the r firmly held; but in some of the modern fabrics

ess is called "setting."
l is one that appears on neither surface of the fabric, but is used only to [illegible] ys runs longitudinally and is usually composed of jute, sometimes some [illegible] ed.

as low as 4½ rows per inch, the tufts work loose all too easily after period of wear and under any violent treatment such as is applied b the modern vacuum sweeper. To some extent the tendency of th tufts to draw out is checked by the application of sizing to the bac of the fabric. After the carpet is woven, it is reversed and painte with this pastelike solution. In general, the lower the number o rows in the fabric the heavier is the coating of sizing applied. Thi treatment, however, has really no great permanent value. After time the sizing cracks and peels off, and the tufts are again free t come loose.

One of the chief advantages of the Axminster lies in the field o carpet design. By reason of the method of manufacture, the num ber of colors that may conveniently be employed is practically un limited, except by the additional cost of dyeing. As far as the weav ing is concerned, any combination of yarns may be arranged on th spools and inserted into the goods. In consequence, Axminsters hav usually been known for their diversity of colors, even for a tendenc toward baroque and rococo designs. On the other hand, there is practical limit on the length of "repeat" in the pattern. For eac additional row required in the construction of a "repeat" an addi tional spool must be prepared and mounted in the continuous chai overhanging the loom. The usual "repeat" in the Axminster trad is, therefore, restricted to 50 or 75 rows or spools. The constructio of a medallion rug in any such size as 9 by 12 feet, where the numbe of rows or spools may easily run over 450, becomes a very expensiv and laborious undertaking.

The term Axminster is, in the American trade, of rather moder origin. The product of the Skinner-Smith loom was first calle "moquette," [13] and this term was retained in the tariff act of 191 (pars. 293 and 300) although practically extinct in the industry an trade. There are, to be sure, minor differences between the moquett and the present Axminster. By a different arrangement of fillin shots and by variation in the tension under which the binder war threads were held, a ribbed effect was developed on the back of th fabric; and this was the distinctive feature of the moquette goods Subsequently it was found that this ribbed back was not withou disadvantages, especially the tendency for the tops of the ribs to suffe all the wear coming on that surface; a fabric with a flat back was there fore evolved and denominated Axminster. Other terms are als sometimes heard in the trade, such as Crompton, Royal, and Imperia Axminster goods. The first refers specifically to carpets manufac tured on the Crompton type of Axminster loom, a modification of th original Skinner-Smith loom; but names of machines have becom confused and the term Crompton Axminster is frequently applied t any machine-made Axminster. The other terms are drawn from th British Axminster industry, and pertain to Axminsters of particula construction that have been developed and quite widely accepted b the British manufacturers. Like the term "moquette," they ar all variations of a single basic type.

Chenille Axminster.[14]—The distinctive feature of the chenille Ax minster, as compared with the Axminster proper, is the preparatio

[13] This term was originally applied to rugs manufactured in France, and is to-day the French term fo Wilton.

[14] Another name for this type of carpeting, used especially in England, is Patent Axminster, derive probably from the fact that Templeton, of Glasgow, the developer of this fabric, long held a paten monopoly. The term has been retained mainly to distinguish this type from the Axminster proper "Victorian" is another English term used for chenille Axminster.

a the form of tufted yarns, prior to their insertion
of weft and warp threads.
y operation necessitates the weaving of a special
is of a gauze texture, having a few warp threads
) close together and then a space often as great as
ich and a quarter, before another group of such
ntered. As the cloth is woven, the spaces inter-
these groups of warp threads are filled in with the
finished fabric is run through a special cutting
evers the wool-weft threads midway between the
-warp threads. Thus the tufted yarns or rows of
ioned are secured.
s of tufted yarn are cut, they are carried over a
which the surface is fluted. By virtue of the fact
of warp yarns fall into the base of the V-shaped
yarns projecting on either side are pressed upward,
in which position they are fixed by the heat of the
oduct, on account of its appearance, was early
le" or caterpillar; but in the modern manufacture
only designated "fur." The whole process by which
secured is generally spoken of as "weft weaving."
of the "fur" to the foundation fabric (called "set-
de) is peculiar in that hand operation is retained to
extent than in any other type of machine carpet
r the proper shed has been made in the warp threads
inder threads are usually of cotton, and the stuffer,
, a row of the fur is deposited therein, close to the
ed. The fur may have been wrapped on a stick and
d from side to side; it may have been wound into a
l across the loom in a shuttle; or it may be retained
nd laid in the shed by means of a special weft-carrying
perates automatically upon a bar behind the shed of
In any case the loom stops and the fur is gently
he warp. The fur must then be straightened by the
vers (there are usually two, and to a wide loom three
to lie with the point of the V downward, and combed
its proper alignment with the portion of the carpet
. The loom is then restarted, and by a change in the
eating up of the reed the fur is firmly consolidated
ndation fabric. As in the Axminster proper, weft
do not appear on the surface are inserted to hold the
and to give body to the goods. In the chenille trade
avy woolen yarns (often containing a large percentage
mployed in the back for the finer qualities of fabrics,
s for the cheaper types.
tages of the chenille Axminster lie chiefly in the firm
the construction and in the possibility of producing
ual height. The individual pile threads are bound by the
of the "weft cloth," as the fabric is called from which
tained, and the fur is bound to the carpet foundation
r, or more specifically the "catcher" warps in the final
'setting." The height of the pile is controlled by the
ween groups of warp threads in the weft cloth, and a
re-eighths of an inch may readily be secured—as com-

pared with a height of one-fourth or three-eighths of an inch on the usual Wilton or (plain) Axminster. The advantage which the (plain) Axminster possesses of utilizing an unlimited variety of colors also inures to the chenille Axminster, but not without some drawbacks. By changing shuttles in the weft weaving any arrangement of colors may be incorporated into the resulting fur. But a greater number of colors signifies a great complexity of pattern; and the difficulties in "setting" are much increased with this added complexity of design, since each row of fur must be so adjusted and combed that the figures exactly fit. However, at the present time, the fashion in chenilles is predominantly for solid colors—sand, smoke, dull blue, and the like—or in the case of rugs, two-tone effects; and this consideration of design is of minor importance.[15]

Relative quality in a chenille Axminster is determined principally by the character of wool yarn used,[16] by the number of rows of chenille per inch, the height of pile, and the character of the backing yarns. In general, however, the grades of such carpeting produced in this country are of the highest qualities—luxury articles—as, indeed, might have been deduced from a knowledge of the method under which this fabric is manufactured. Chenille Axminsters are probably the finest carpeting, at least in some respects, that are domestically produced, just as they approach nearest to a handicraft method of production.

Smyrna.—The Smyrna rug[17] is unique in at least one respect: it is distinctly an American fabric, being manufactured only in this country.[18] In point of construction it resembles the chenille Axminster, as already intimated. It differs in that the fur is not pressed into a V shape. After the weft cloth has been cut, the strips are twisted, wound on to cops, and so used in the "setting" of the rug. The fiber ends project in all directions from the fur, and as no foundation fabric is employed they project on both surfaces of the finished carpeting, making a reversible piece of goods. The warp yarns are usually of cotton, and the filling yarns which are inserted between rows of fur are usually of jute. Although an excellent fabric in many ways, and although rather expensive, by reason of the large amount of wool contained and of the method of manufacture (being also a semihand process), it is substantially inferior to the chenille Axminster.

The manufacture of Smyrna rugs was at its height 10 or 15 years ago. More recently its production has declined, and to-day it forms an almost negligible portion of the total domestic carpet output.

(c) WARP-PILE FABRICS.

The distinctive characteristic of carpets of this group, which embraces the Brussels, Wilton, tapestry, and velvet types, is that they are pile fabrics in which the warp is the important factor since it

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[15] Paragraph 293 of the tariff of 1913, which covered chenille as well as (plain) Axminster, contained a qualifying clause: "figured or plain." With respect to the (plain) Axminster manufacture, this clause was of little significance, as few Axminsters are produced in solid colors. With the chenille goods, however, it is of importance. At the present time, a much larger proportion of plain fabrics than of any other type of carpeting is manufactured here. Moreover, there appears to be a substantial difference in costs between the manufacture of the solid and of the figured goods in the chenille industry.

[16] Either worsted or woolen yarns may be used in the manufacture of the fur, but at the present time, on account of cost, the former is only exceptionally employed. Backing yarns, if of wool, are of the woolen variety.

[17] The Smyrna carpeting has been produced only in the rug form. It derived its name from the oriental patterns in which it was at first manufactured, its seamlessness, and its generally luxurious appearance.

[18] It may be for this reason that Symrna rugs have never been mentioned in any of the tariffs.

ı. In the knotted-pile and imitation knotted-pile
gement of rows of weft is the dominant consid-
he warp-pile fabrics the weft yarns become only
the colored warps. The ingrain carpeting, to be
some cases also carries the design in the warp, but
› pile.
› includes looped-pile carpeting, such as Brussels
type of fabric entirely foreign to the handmade
nay be noted that, as in the case of the knotted-
: are real and imitation fabrics, although there is
he same relationship between the two as in the case
and imitation knotted-pile fabrics. The Brussels
the original types, and the tapestry (earlier called
;) and velvet are the results of attempts to produce
Wilton effects in cheaper fabrics.
ıe looped-pile Brussels carpeting is a distinctly
floor covering. Inasmuch as the surface and body
›d, and as the looped pile presents a smooth, hard
ssels possesses unusual features, especially from the
›f durability. However, it is generally considered
pile gives a less pleasing appearance than the plush
in the hand-tufted, Axminster, Wilton, and other
ısequently the production of Brussels both in the
nd in England has tended to decline in the last 20
e fabric is one of the standard types of floor covering
ays a certain limited demand for it.
is almost completely made in the loom, the only
›cesses between spinning and weaving being the dye-
yarns and their subsequent winding upon spools, a
a spool. There is comparatively little intermediate
"setting" or preparation of long spools in the Ax-
ıcture, or like the fabrication of the "fur" in the
ster and Smyrna. The spools of variously dyed wool
ted in frames behind the loom itself, and customarily
lt one above the other, each contain spools of but a
hus arises the common description of Brussels carpet-
ı "5-frame" or a "6-frame" piece of goods. In the
tion proper the particular wool yarns required to
ure or design on the face of the fabric are brought to
the goods, as needed, by the Jacquard mechanism
› loom. The other sets of wool yarns, not brought to
that particular pick in the goods, remain submerged
› to the compactness and substantial body of the
nsequently the denomination of "6-frame" indicates
onal color over the number used in a "5-frame" has
, and also that a heavier fabric has been produced.[21]
›n of the looped pile is effected by one of two methods,
whether the draw-wire or the stationary-wire type of
l. The former, sometimes also called the "side-wire"

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5 of the tariff of 1913. The qualifying adjectives "figured or plain," which appear
r to the design, but really have little significance, as few Brussels carpets are without
Moreover, the difference in cost between figured and plain fabrics of the same
material.
i from the competition of the tapestry Brussels or imitation fabric.
ture of the manufacturing process, these goods are sometimes called "body Brussels."
to differentiate the goods from the inferior tapestry Brussels.

loom, is the original type of power loom for this sort of weaving, and is still the predominant type. As the shed of the wool-warp yarns is made in this loom, under the control of the Jacquard mechanism, for a particular pick in the fabric, a wire is inserted into the shed. Immediately thereafter the shed of the warp threads is changed, making a loop over the wire of the wool yarns that had previously been raised.[22] By means of the shuttle there is inserted a shot of weft and this, in combination with cotton-binder warp threads, holds and fixes the wool yarns in their position over the wire. Then a certain other group of wool warp yarns is raised to form a shed, another wire is inserted, and so the process continues as the carpet is built up.

After 25 or 30 of these loops over wires have been made and fastened into the body of the goods, the wires are withdrawn in succession from the completed portion of the fabric; as each wire is withdrawn it is immediately utilized in the formation of the loop being made at that particular moment. The withdrawal and insertion of the wires are effected automatically by an almost human movement in the auxiliary mechanism of the loom.

The stationary-wire loom reaches the same end, the formation of the looped pile, by a quite different process. The wires, of substantially the same diameter, run at right angles to those in the draw-wire machine, being placed at right angles to the breast beam of the loom instead of being inserted parallel to it. These wires, long enough to hold 30 or 40 loops, are at first fixed to the breast beam, but as the weaving proceeds become loose in the fabric, held only by the loops which have been made over them. The loops are made by an oscillating motion of the wool-warp yarns or, more technically, a leno motion. After the yarns appropriate to the particular row of loops have been raised,[23] the yarns are made to move to the left and then downward, bringing the yarns over the wires, the points of which extend in among the warp threads beyond the apex of the shed. Thereby loops are formed over the wires. Immediately a shot of filling is inserted to hold the loops. The warp yarns are then moved to the right and back to their original position, forming another series of loops over the wires, which are likewise bound in by a shot of weft. The loom is then ready for another division of the warp threads, suitable for the succeeding row of loops, whereupon the process is repeated. After a sufficient number of loops have been formed, the beating up of the loom forces the loops earliest made off the end of the wires nearer the breast beam, the wires now being loose in the goods; and that section of the fabric is completed. The advantages of this type of loom are real, particularly in that control over the wires, which is so difficult in the case of wide draw-wire looms, is here the same whatever the width of the machine; the space required at the side of the draw-wire looms for the insertion and withdrawal of the wires is wholly saved. It is asserted that there is also an increase in production over the draw-wire loom.[24]

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[22] The wire is about three-sixteenths of an inch in diameter and as long as the carpet is wide. The difficulty of control over the wire and the space required for the (automatic) insertion and withdrawal of these wires are serious checks on the development of the weaving of Brussels (and Wilton) carpets in broad widths.

[23] In this method, actually two rows of loops are required to fill the place in the design of the fabric occupied by one row under the older (draw-wire) method. The double row, however, may be treated as one.

[24] The manufacturers of the stationary-wire loom profess complete confidence in its advantages over the draw-wire loom and report that these advantages are evidenced in the mills using it; but a prominent manufacturer states that the innovation has not yet been made practical and that its use has, therefore, been very restricted up to this time.

e draw-wire and stationary-wire methods, in ad-
yarns forming the face of the goods, greater firmness
: by the weaving of a backing fabric, composed of
linen or jute-filling threads; and sometimes a jute
ıserted to impart greater bulk or weight to the goods.
ıess are also enhanced by the sizing of the cotton or
warp threads and by back starching the finished

ggested, the number of colors in the Brussels carpet
ically, to the number of frames employed in the weav-
ırm "5-frame" carpet implies one in which five colors
:e and in the weaving of which five sets or frames of
have been utilized. Since the greater the number of
:er the thickness of wool body yarns (other things
mes, colors, and quality may be said to be in direct
, it is sometimes possible in the construction of
of particular design to divide the spools of a single
or more colors; this practice is commonly called
asmuch as the inexperienced purchaser can not
ıe difference in quality between a carpet which con-
and one that does not, although the quality is sub-
ıd thereby, the practice permits deception in the hands
ɔus retailer. In the wholesale and distributing trade,
ourse not attempted; and even on the manufacturing
is considered an irregular use of the possibilities in
:arpet production. In these sections of the trade, a
monly indicated by variation in the nomenclature of
.us a piece of 3-frame Brussels actually woven on
ut showing four colors on the face by virtue of a
led a "3½-frame" fabric.
twithstanding the occasional use of a "plant," the
ıumber of colors that can be e ployed in a single
ıple, as compared with the range ‹ f colors available in
ls, is a serious handicap to the manufacture of Brussels.
ıe uneconomical method of employing the wool yarns.
are too valuable to be buried in the body of a fabric,
jute yarns would do almost as well.
ilton carpeting is, in method of construction, quite
Brussels just described, whether produced on the
ɔn the stationary-wire loom. The arrangement and
the frames, the operation of the loom, and the general
wool and other yarns in the body of the fabric are all
re are, however, several differences, the chief of which,

ıgh worsted yarns alone are used in the Brussels manu-
voolen and worsted yarns are employed in the Wilton
yarns of course produce the superior fabric.
shape of the wire inserted to form the loops, whether
ire or the stationary-wire loom, is different from that
ussels manufacture—more oval than round—and con-
ires a greater length of wool yarn to form each loop.
ion of wool yarn in Wilton carpets is accordingly some-

M in the tariff of 1913. As in the case of Brussels, the qualifying adjectives "figured
ıred in this paragraph, referred to the design of the fabric, but were of little significance,
pets are without some figured pattern. Moreover, the difference in cost between
ics of the same quality would not be material.

what greater than in a Brussels carpet of the same "pitch" (number of warp ends per inch) and "wires" (rows of loops per inch). The difficulty of controlling the wires in the draw-wire machine, especially in the case of wide looms, which was mentioned above in connection with Brussels weaving, becomes even greater in Wilton weaving on account of this alteration in the shape of the wire.

Third, both types of loom used to make Wiltons are provided with means whereby the loops formed over the wires are severed at their highest point. In the case of the draw-wire machine, this is accomplished by the provision of a small, sharp blade at the extremity of the wire inserted to make the loops. As the wire is withdrawn, this blade severs the whole row of loops formed over its haft. In the stationary-wire machine, the beating up of the woven goods gradually presses backwards the series of loops already douped over the wires and, instead of falling off the end of the wires nearer the loom beam as in the Brussels manufacture, they are forced against a series of stationary knives, which also sever the loops at their highest point. This severance of the loops, and the production of a plush-pile fabric thereby, is of course the most conspicuous feature of the Wilton as distinguished from the Brussels, as in the latter the loops are not cut but left as woven.

Fourth, since the cut pile of the Wilton carpeting acts as a cover, the weft or filling yarns may be of jute or cotton, instead of the linen yarns usually employed in the Brussels carpeting, where the upper filling yarns are more easily observed. However, on account of the formation of a tufted instead of a looped pile, somewhat greater binding force must be exerted by the filling yarns; and accordingly it is quite customary in the better grades of Wiltons to insert three shots for each row of loops instead of two as in Brussels weaving.[26]

The manufacture of Wilton carpet, like that of Brussels, is handicapped by the limitation in the number of different colors which can be used in the production of a single piece of goods. Nor can it rival the Axminster and chenille Axminster in height of pile. However, Wilton makers have generally abandoned the attempt to secure a heavy pile, and by the execution of fine, delicate designs of carefully chosen colors, in a close-clipped fabric, seek to imitate some of the best oriental fabrics. The better varieties of these products are beautiful carpetings, and by some people are considered the best examples of machine-made floor coverings.

The terms "Saxony" and "Tournay velvet" were bracketed with Wilton carpet in the tariff of 1913 (par. 294). Saxony is a term loosely used in the trade, but generally refers to a wool Wilton, i. e., a Wilton with a face of woolen yarns. Tournay velvet, on the other hand, was quite out of place. Although the term is rarely employed at the present time, it doubtless referred to a specially fine quality of tapestry velvet carpet.

Tapestry.[27]—The general appearance of the tapestry carpet is not materially different from that of the Brussels carpet; and, as the older and perhaps more proper name of the goods—tapestry Brussels—

[26] This latter point pertains to draw-wire weaving. In weaving by the stationary-wire loom, no increase in filling yarns is made.

[27] The term "tapestry" was originally used to designate the particular type of weave by which tapestry and velvet carpets are constructed. The earlier nomenclature of these goods was "tapestry Brussels" and "tapestry velvet." In the American trade, however, these appellations have been shortened into "tapestry" and "velvet," respectively.

› the object of the manufacture.[28] On the other hand, ›n of worsted yarns is much less per yard of carpet than › goods, where the yarns not required for a particular re buried in the body of the fabric.

try carpet there is but one set of (worsted) warp yarns. ies the entire face of the carpet and carries the whole lly it is by means of printing each warp thread in a suc- rs that diversity of colorings is obtained; in the manu- ssels this is accomplished by the use of frames. The nade possible by this method are, indeed, much more can be obtained in Brussels. Almost universally the ı-printing process is used to prepare the warps. In this arp threads, dyed a single color or not according to the ound upon the circumference of a large drum, 6 to 18 ɛr and 2 to 8 feet in width of face, set to revolve vertically through its center. The threads wound upon it are nsverse bars of varying breadths and colors, in accord- plan of the design. The printing is accomplished by troughs and rollers which run on rails to and fro across ınd below the drum while stationary. It is then revolved n next required for the particular color used. After all o be dyed in that color are completed, other sections are d to the colors required. When a number of groups or such yarns sufficient to complete the total number of in the fabric have been printed—each warp yarn with a ıngement of color spaces requiring a special printing— varp threads are assembled and run upon a loom beam :equired by the design of the goods.[29]

ılled tapestry carpets are woven of undyed yarns, and a special type of cylindrical printing machine the various ed by the pattern are simultaneously impressed upon fabric. Because of the difficulties in obtaining satisfac- gh impregnation of the (worsted) yarns after weaving and ıe tendency of the dyes to spread, this method of produc- :ally considered inferior to that in which the design is he warp before weaving.

ng process, whether with printed or plain warp yarns, is simple, at least as compared with most types of carpet ince only one set of (worsted) warp yarns is required, there ›le, no occasion for the use of the Jacquard mechanism as manufacture—a mechanism which always complicates n and retards production. In this weaving, the draw-wire ›loyed, similar as far as that attachment is concerned to re loom of the Brussels trade. The stationary-wire loom, ıown, is not used in tapestry manufacture.

ıt and bulk of the carpet, which in the case of the Brussels l largely by the (worsted) warp yarns submerged in the › fabric, are obtained, in the case of the tapestry, by the ater number and weight of jute and cotton yarns than are Brussels. Two and sometimes three stuffer warps are

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apestry Brussels" was employed in the tariff act of 1913 (par. 297). The phrase "figured paragraph had some significance in this case. A material proportion of the tapestry s in solid colors, especially a large and growing production for the automobile trade. as the phrase "printed on the warp or otherwise"; cf. machine printing, below.
this assembly and beaming is called "setting."

inserted, and jute yarns are very often employed for fillings in place of linen, as in Brussels. Besides adding to the weight of the goods, this utilization of jute fillings serves the purpose of cheapening their cost, an important feature, since the tapestry can not compete with the latter on the basis of quality. Linen filling is also used, however, to a considerable extent.

While economy in the use of worsted yarns is an important advantage in the manufacture of tapestry carpet, this type of carpet is produced at a disadvantage in several respects: (*a*) The drum-printing operation is quite expensive, involving as it does considerable hand labor; if fabric printing is resorted to, the results, as above stated, are not wholly satisfactory. (*b*) Even in drum-printed tapestries, the colors in the design are often not as distinct as in the Brussels goods. In spite of all precautions, colors in the different sections of the warp threads are liable to run into one another and to show in the finished fabric. (*c*) By reason of the peculiar technical character of drum or fabric printing, it is uneconomical to produce small quantities of a design. Two or three hundred pieces of a single design must be run off.

Velvet.[30]—In appearance the velvet, or tapestry velvet, carpet is made to imitate the Wilton above described, while in method of manufacture it follows generally that of the tapestry or tapestry Brussels carpeting. The differences between it and the tapestry are, accordingly, for the most part similar to those which distinguish the Wilton from the Brussels; the employment of both worsted and woolen yarns; the somewhat greater consumption of wool yarn in a fabric of the same "pitch" and "wires" per inch; the use of a wire to which a blade for cutting the loops is attached[31]; the usually greater number of weft threads; and the somewhat lower "pitch" or number of wool warp ends to the inch. It may be added that to obtain cheapness of product, the tendency in the production of velvet, as in that of tapestry, is predominantly to employ woolen yarns rather than the finer but more expensive worsted yarns.

(D) SINGLE OR MULTI-CLOTH CARPETS.

The carpetings included in this category are quite diverse, but all have the characteristic of being merely plain-woven fabrics. The weaves are not dissimilar to those employed for cloths, blankets, and the like, but unlike any of the carpets heretofore considered these goods possess no pile either of the plush or looped character.

The single-cloth fabrics, which include almost the extremes of carpet types, may be briefly described. The Aubusson, a hand-made "tapestry" made by French weavers, is a plain woven article, although wide diversity of colors and intricacy of design are introduced by means of frequent changes in weft threads.[32] The

[30] Both the terms "velvet" and "tapestry velvet" were employed in the tariff act of 1913 (par. 296). As in the case of the tapestry carpet paragraph, the addition of the phrases "figured or plain" and "printed on the warp or otherwise" were of significance. However, the use of machine printing is not so wide in the velvet manufacture, largely by reason of the difficulty of forcing the dyes from the cylinders into a tufted fabric.

[31] As in the case of the tapestry carpet, only the draw-wire loom is employed.

[32] The Aubusson fabric was specifically mentioned in pars. 293 and 300 of the tariff of 1913, though the other goods included in these paragraphs are all tufted carpets. It is to be noted that although the Aubusson is woven as a single-cloth fabric, it is backed with a felt or other cloth before it is placed on the floor for use.

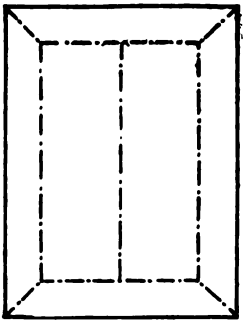
e consists of coarse handmade carpetings, mainly
sually from India. These are composed of heavy yarns,
rincipally of goat, cattle, or other hair, and are piece-
rinted in the simplest patterns. The trade name "drug-
applied to them.[33]
cloth fabrics, included under this general group, are
ignated Kidderminster, Scotch, or ingrain. The last-
term almost universally employed in the United States.
le-cloth fabrics, they are essentially only heavy wool
ble or two-ply ingrains [34] are double cloths composed
and two wefts woven together, the two fabrics being
ier by the transposition from time to time of the two
ds in accordance with the figure of the pattern. The
e-ply ingrain is similarly a threefold cloth.[35]
tic production of ingrain carpeting has suffered a serious
in quality and in quantity of output during the last 20
With respect to quality, it is noteworthy that whereas
the production of treble ingrain, the heavier and better
ain, was a substantial part of the whole ingrain manu-
ay hardly a yard is turned out in this country. Further-
type of material going into the two-ply ingrain, there
similar falling off.
facture of ingrain at one time utilized a considerable pro-
vorsted yarns; but as the competition of other types of
came keener, the cheaper woolen yarns were substituted.
the cheapest forms of woolen yarns are used, those con-
e admixtures of wool wastes, shoddy, and cattle and
The original ingrains, moreover, were woven with
rps; but for some years the use of cotton warps has
tomary. Finally, under the stress of the recent rise in
indeed most branches of the carpet manufacture were
s impelled to a lowering of qualities, paper or "fiber"
introduced into the filling. Many of the mills which until
d manufactured ingrain carpeting (of the cotton-warp,
t type) have gone over in whole or in part to the production
-called "wool and fiber" carpetings, some of which have as
ree shots of paper yarn to one of wool (and cattle hair). In
of these old ingrain mills have ceased to use wool at all.[36]
arpets are woven upon looms which do not differ fundamen-
those employed in making woolen and worsted cloth.
nes are really box looms of heavy construction. In the
plain goods heddles can be used,[37] but in the weaving of
ods a Jacquard attachment is necessary. However, such
not uncommon in either the wool or cotton industries and
dy none of the peculiarities of the looms employed in the
re of Axminster, Wilton, or even the tapestry carpets.
er varieties of carpeting were mentioned in the same para-
he tariff act of 1913 with ingrains: Wool Dutch carpets (par.
ll-chain Venetian (par. 298). The former has been defined

ere mentioned in par. 301 of the tariff act of 1913. As intimated above in connection with
here is considerable confusion as to the exact meaning of the term "druggets."
par. 299 in the tariff act of 1913.
aph in the tariff act of 1913 which covers this type of fabric (par. 298) described the goods
ain, three-ply.'
ission of wool and fiber and all fiber carpeting, see the Report of the Tariff Commission
erings Other Than Wool."
ild color goods were called "Terry" carpeting in the trade.

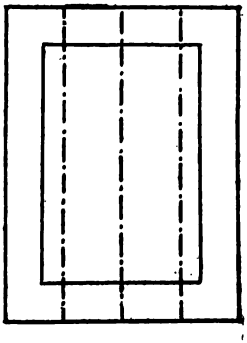
Chart A.—THE VARIOUS FORMS OF CARPETING.

CARPET, OR ROLL-GOODS.
(1)

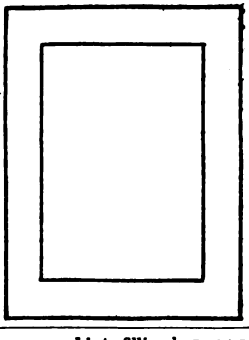
MITERED RUG, OR SEAMED RUG MADE FROM ROLL-GOODS.
(2)



SEAMED RUG (MADE FROM RUG PARTS).
(3)



SEAMLESS RUG (WOVEN WHOLE).
(4)



as "a coarse, heavy carpet woven in stripes and similar in appearance to ingrain carpet"; and the latter as "a species of inexpensive ingrain carpet made of a worsted or cotton warp and a jute filling." It is questionable whether wool Dutch carpeting was ever manufactured in the United States; at the present time both are negligible if not nonexistent portions of the domestic trade.[38]

SECTION 3. FORMS OF FINISHED PRODUCT.

There are four forms in which carpeting has been made ready for use: Carpets or roll goods, mitered rugs, seamed rugs, and seamless rugs. Of these, seamless rugs, in the guise of oriental rugs, were undoubtedly the first to be used. They have, however, been the last of the forms, at least of the larger sizes, to come under machine production. The second form, the mitered rug, is a negligible portion of the domestic trade.

(A) CARPETS OR ROLL GOODS.

Carpets or roll goods are narrow fabrics in which a design, if there be one, is repeated continuously the whole length of the piece. (See No. 1, chart A.) The widths employed are customarily 22½, 27, and 36 inches, of which the 27-inch width is most common.[39]

[38] Obviously, a Venetian of cotton warp and jute filling has no proper place in Schedule K.

[39] The ingrain manufacture is unique in using the 22½ and 36 inch widths almost entirely. Again, the chenille Axminster is usually woven in much wider breadths than any specified above, i. e., in 9-foot widths or greater.

20 years ago such carpeting was the chief type used in ates. Hardwood flooring was rare and the floor spaces s were completely covered with goods of this description.
carpeting were sewn together in such fashion as to continuity of the pattern and were cut at the edges of actly to fit the contours.
rge use for these narrow goods in former times was as stairs, although here the design was generally different itable for the covering of rooms. But since hardwood ıave come into general use the employment of stair cov- so markedly declined.
s is the simplest form of carpeting to manufacture, pre- esign is not unusually complicated. In the manufacture r relatively few spools need be prepared, and these can : and over again; in the making of Wilton and Brussels l cards need be cut, and these may be similarly used; and ıry and velvet manufacture the warps may be printed in ties. Practically all factors favor quantity production.
ds reach the retailer in the form of rolls, as the name mally made up in lengths of 45 to 50 yards, and are cut ler to suit the requirements of the consumer.

(B) MITERED RUGS.

introduction of hardwood floors and the growing demand s first stage was to utilize existing facilities. Strips of roll sewn together to form a central portion of the rug; a der, not unlike the stair coverings, was woven and at- he edges of the center; and in the corners, where the rder met, a diagonal seam was made, joining the two preserving as far as possible the continuity of the border ee No. 2, chart A.) The formation of this corner seam "mitering," and accordingly this type of rug came to be "mitered" rug.
e of rug merely served as an expedient. The design of the which formed the center was often broken at the edges border was sewn on, and the figure in the border itself did not match exactly at the corners. Again, the mitering ners not only caused an appreciable waste of the woven unavoidably left a mound which marred the smooth lay ls. Consequently, when other, more perfect types of rugs the mitered rugs fell into disuse. At the present time they considerable portion of the domestic production.

(C) SEAMED RUGS.

roduction of the seamed form the design is made for the hole and is subsequently divided lengthwise into two, three, ctions or strips, the number depending upon the width of Inasmuch as narrow or carpet looms do not weave goods ıches in width, a seamed rug which exceeds 6 feet in width mally be woven in three parts. A rug 9 feet wide is usually

woven in four parts.[40] In such a rug each of the two outer sections or "rug parts" carries the corner squares, which are longitudinal strips of border, and over the greater part of its length it carries also usually a small edge of the design of the center portion. The other two sections or "rug parts," which form the middle strips of the completed rug, carry the design at either end.[41] No. 3 of chart A shows the normal division of a rug 9 by 12 feet, a standard size of rug.

It is obvious that the manufacture of seamed rugs is more complicated than that of either roll goods or mitered rugs. The complications are important to an understanding of the tariff problem in connection with the carpet industry and require consideration in some detail.

(*a*) With respect to actual manufacturing processes: The complexities in the case of seamed rugs are increased all along the line from designing through to the baling of the finished rugs. These complexities arise mainly from the initial differences in design. It might seem that while the pattern for a piece of roll goods need not be greater than to cover an area 3 or 4 feet in length and 27 inches broad in the finished fabric, the pattern for a rug must cover an area in the goods equal to the whole area of the finished article. But a closer examination of rugs will show that, with the exception of certain handmade goods, all rugs may be divided by lines between the medians of the sides into four sections similar in design,[42] so that even in the case of the most intricate design, that of a medallion rug (see chart B), it is necessary in order to outline the pattern to cover only one-quarter of the surface of the completed product; that is, a length of 12 running feet 27 inches in width. In most other rugs it will be found that there are "repeats" in both center and border of the fabric. Thereby the requisite pattern is further curtailed. In place of one to cover 12 running feet of fabric in a medallion 9 by 12 rug, it may suffice to outline a pattern to cover only 4 or 5 running feet in completed goods. (See also chart B.) This latter area is not over twice that required for most roll goods.[43]

In spite of such opportunities for the simplification of the manufacturing operations the following difficulties remain: (1) The minimum normal rug pattern runs twice as elaborate and extensive as that of the average carpet pattern; (2) each size of rug requires a separate pattern even though they all preserve the same general scheme of color and design;[44] and (3) not merely is the work of pattern preparation itself increased by the enlargement of pattern, but the work is also increased in subsequent manufacturing processes. In the manufacture of Axminster, the number of spools to be "set" is increased; in the Wilton and Brussels, the number of cards to be cut; in the chenille Axminster and Smyrna, the varieties

[40] The woven sections are called "rug parts" in the industry.

[41] In the British carpet industry this form is called "Cairo" or "Chlidema" squares.

[42] The term "design" is here used to mean conception or general color scheme; and "pattern" to mean the conversion of that "design" to a workable form on point paper or the like.

[43] In the actual weaving operation, the case of a repeat such as that in the medallion rug—a "repeat" of a whole half a strip—the conversion of design into fabric is effected, for example, in the Axminster or Wilton manufactures, by reversing the action of the series of spools in the movable chain, or of the series of cards in the Jacquard mechanism. In the case of a repeat in center and border, which normally move together, the series of spools or of cards that contain the repeat are used over and over, the corner sections in the border strips and the border sections in the middle strips being used but twice in the manufacture of a single complete rug part.

[44] The design in the detail of elaboration suitable for a 9 by 12 rug would be much too detailed for a rug half that size; and vice versa the sketchy design for a mat would be ill adapted to a large rug.

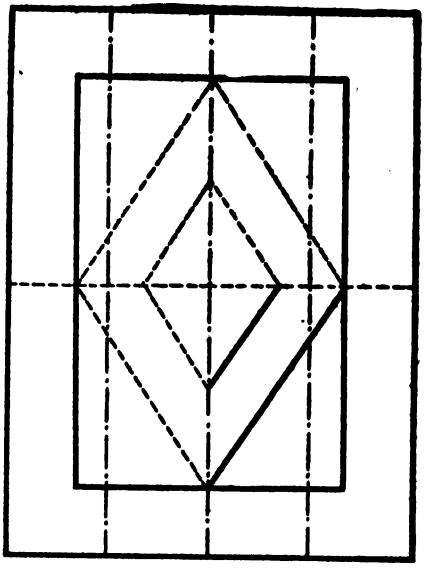
prepared; in the
tapestry and vel-
he drum-printing
umber of differ-
warps to make
such manufacture
ine-printing meth-
t of cylinder to
n in weaving, the
pattern increases
in inverse ratio to
expected. A pat-
peat in center and
est to weave, since
must maintain
n lest too few or
tions of the repeat
to start reversion
the proper time
ie goods. A medal-
s easier in this re-
th are much more
han the weaving of
here the pattern
s itself.[45]

greater amount of
d by the greater
design of a seamed
ed with roll goods, a
unt of additional
lirectly in the case
l rug because of the
t form of floor cov-
xample, in the finish-
s, the inspection of
ods consists merely
ion for defects in
ually of a minor
hereas inspection of
ug involves also the
the "rug parts"
onstitute a complete
ure that they are of
and that the design
oughout. Each set
parts must be spread
and examined. Sub-
ie rug parts must be
ier, the ends bound
n some cases a fringe
Furthermore, the la-
l in baling and han-
mpleted rug is aug-
the bulky and unwieldy character of the goods.

Chart B.—VARIATION OF DESIGN IN RUGS.

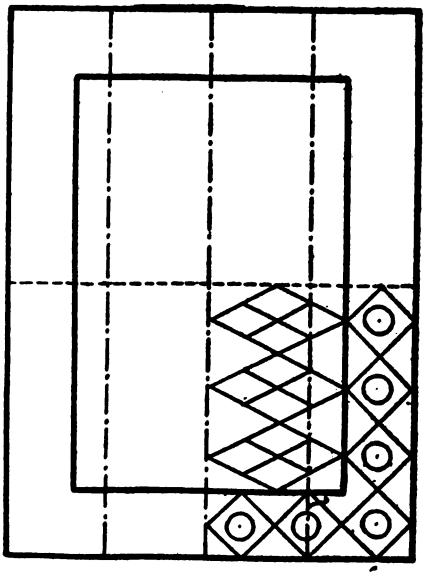
SEAMED RUG WITH MEDALLION CENTER.

(1)



SEAMED RUG WITH "REPEAT" IN CENTER AND BORDER.

(2)



[45] mence training on the weaving of roll goods.

(*b*) The likelihood of the production of imperfect goods is greater in the case of seamed rugs than in that of roll goods. The rug parts going into a specific rug may have been woven on three or four different looms, any of which may have been slightly out of adjustment; and as a result one or more of the strips may fail to match. A slight mismatching is remediable in the finishing processes, especially in the case of the cheaper types of carpeting. The goods may be shrunken or stretched and so made to match. In some mills the slightly uneven strips are sewn together as they come from the looms; the back of the rug is then given a coat of sizing and placed on a frame to dry. The fabrics treated in this way will lie flat and even, at least for a time.

The following table presents statistics collected by the Tariff Commission on the production of imperfects by several companies during the last six months of 1919:

Production of perfect and imperfect carpeting, comparing carpets and rugs, last six months, 1919.

	Roll goods.		Seamed rugs.		Seamless rugs.	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
Mills reporting (number)	2	3	6	6	5	7
Total production (square yards) perfects and imperfects		$3,182,481	1,607,965	$6,369,056	2,141,135	$4,912,979
Production imperfects (square yards)		60,733	89,758	189,382	71,477	131,321
Ratio of imperfects to total production (per cent)	2.76	1.91	5.58	2.97	3.34	2.67

For the firms reporting, the proportion of imperfects produced in making roll goods will be seen to be the least, while that of seamed rugs is the highest, with seamless between the two. In yardage, the proportion of imperfects produced in the manufacture of seamed rugs is twice that in the manufacture of roll goods, while the proportion produced in the manufacture of seamless rugs is three-fifths of that in the seamed.

Should a rug part be seriously defective, the loss to the manufacturer is proportionately much greater than that from a defective piece in a roll of carpet. In the latter case, the portion affected is merely cut out of the roll; and the rest, down to a 20-yard strip, may be delivered as perfect goods. A spoiled rug part, on the other hand, can at best be matched with equally defective strips from the other sections of the rug, and the whole article sold as seconds; the return from such an article is a small percentage of that from a perfect piece of goods. Often such defective rug parts are at once sold for what they will bring without any attempt to make them into whole rugs.

(*c*) Some small loss of time occurs in the manufacture of rug parts by reason of the "drop-lea" or intermediate space woven of backing threads between any pair of rug parts as they come from the loom. However, inasmuch as the "drop-lea" when cut and turned under serves to bind the ends of the rug, it is questionable whether the insertion of this piece is wholly waste. Moreover, the piece is only 3 or 4 inches in length, and in the weaving of a series of, say, 12-foot strips, the loss through this means, though real, is a minor consideration.

(D) SEAMLESS RUGS.

ıg may be defined as a rug over 36 inches wide woven
(See No. 4, chart A.) The limitation as to width is
of the necessity of distinguishing seamless rugs
t are called in the trade "mats and runners." From
of construction there is no real difference. Mats and
ıtially small or odd-shaped seamless rugs, the differ-
n mats and runners, of course, being on the basis of
:h these forms are woven on the narrow carpet looms
3 inches of reed space), and so from a manufacturing
ıey do not present the technical difficulties of the
weaving.[47]

ing the increase in the difficulties and costs over those
ıt or rug-part weaving is material; but the finished
ə distinct advantage of a smooth surface unbroken
matter how skillfully made, seams are bound to
ter or less extent, especially in slight mismatchings
On this account the seamless fabric is steadily
eater demand, and manufacturers of carpeting are
nd more of their capacity to its production.

of wide reed space are necessary for the manufacture
In this respect the peculiarly fortunate position of
xminster industry may be particularly noted. By
ical considerations, especially the nature of the actual
tting" process, looms in this manufacture have always
rather wider than in other branches of the carpet in-
ey were further broadened with comparative ease to
demand. At the present time a loom 9 feet wide is
·ed a wide loom in this branch of the trade. Many of
ıre 20 feet wide, and some as wide as 30 feet. In
ns the chenille Axminster manufacture holds a unique
rpet industry.

of looms on Axminster, tapestry, and velvet carpets
ess rugs also proceeded without great delay and with-
ing many obstacles of a technical character; while
ɔoms for the weaving of art squares had already been
ıut the adaptation of the draw-wire loom used in mak-
and Wilton carpets was found exceedingly difficult.
of control over the long wires of small diameter, espe-
res as would be employed on a Wilton rug with a high
/ires" per inch, proved an almost insuperable obstacle.
machine makers made special effort in this direction,
ə war a few wide German machines had been imported
try.[48] But most of the Brussels and Wilton rugs made
y were and still are of the seamed type. In this regard,
ted, the newer, stationery-wire loom promises well for
Not only is the necessity of control over long light wires
ut the considerable space required at the side of the
ms for the insertion and withdrawal of the wires is saved.

ly considered not to run over 6 feet in length, while runners are usually manufactured
, and 15 foot lengths.
'Ingrain type are called "art squares" in the trade.
s up to 6 feet in width produced by the British were employed in this country but the
e practically all German.

As compared with roll goods, the intricacies of manufacture are increased in the case of seamless rugs in somewhat the same ratio as in the case of seamed rugs, especially with respect to the greater complexity of pattern and the effects following therefrom. Moreover, the completed rug must lie smooth on the floor, but by reason of the possible variations in tension of the warps and beat-up of the reed in the operation of such a large mechanism, this end is not easy to attain. This type of weaving is generally considered the most exacting of all in the carpet industry, and only highly skilled operatives are assigned to it. Finally, it is to be noted that production is substantially slower upon this type of work, and this together with the costly character of the machines themselves, makes it an expensive type of weaving.

(E) SUBSIDIARY FORMS.

While carpets or roll goods, mitered rugs, seamed rugs, and seamless rugs are the only primary forms of finished product, the paragraphs of the act of 1913 mentioned a few subsidiary forms. These were:

"Carpets of every description, woven whole for rooms" (par. 300): This phrase, together with that of "rugs for floors" (par. 303), can not be construed as meaning other than carpeting in the rug form. The former might suggest seamless rugs, while the latter would include all types; and "carpets * * * woven whole for rooms" might be otherwise interpreted to signify rugs woven on special order. However, beyond the fact that the rug form is specified in both cases, the meaning is far from clear.

"Mats" (par. 303): Mats have already been described as small seamless rugs not over 36 inches in width, and of less length than runners.

"Screens, covers, hassocks" (par. 303): The three articles enumerated here are really manufactures of carpeting. They have been mentioned in every tariff law since 1867, and may at some time have been significant means of utilizing carpeting. At the present time, "screens" and "covers" are unknown in the carpet trade; and hassocks are a negligible factor.

"Bed sides, art squares" (par. 303): The term "bed sides" also dates from the tariff of 1867. Presumably it referred then to mats or runners used as the name suggests, but the term has long since ceased to be used in the trade. On the other hand, "art squares" are seamless rugs, not always square, of the ingrain manufacture. The term is still employed in the trade, although dying out with the decline of the ingrain product.

[illegible]

Two important [illegible] this tariff hinge upon the form in floor [illegible] and "rugs," in [illegible] in cost of [illegible] roll goods [illegible] discussed [illegible]

It is [illegible] The following [illegible] relating to the

[illegible]

rpets and rugs under section 904 of Title IX of the
918, article 13:[50]

ld to be distinguishable from carpet when manufactured as one
he manufacturer from breadths which are united so as to form
inctive manufacture, size, shape, and design, figured or plain.
y the yard and sewed together so as to produce a certain size or
e purchaser, shall not be deemed to be a rug within the meaning
axable, even though made principally of wool.

cs the distinguishing feature is the form in which the
n; when made singly, or woven continuously, with a
en them, they are rugs. With respect to chenille
s circumstances are peculiar. The manufacturers of
ter turn out considerable quantities of carpeting of a
) or 12 feet in width. This carpeting is sold to the
rm of a roll. If a customer desires to cover a space 9
r will cut off and bind under a piece of that size, and it
purpose as a rug of those dimensions; but in the in-
erally held that this is not properly a rug.
ods the distinguishing feature is the design or pattern.
r roll goods there is wide latitude as to design. Pro-
strips of carpeting are matched at the seams when
ogether, such goods may be made to cover any given
other hand, the essential characteristic of a rug is
lesign within a given area. Four strips of carpet, 27
d 12 feet long, may be sewn together side by side,
over the same area as a 9 by 12 rug; but the article
will not be a rug. If a border be attached to the
fabric mentioned above, as borders were sewn in the
ered goods, then the article does become a rug in
se of the word. The border, either woven into the
seamed and seamless rugs above described, or sub-
hed to a central part, limits and in that sense com-
n. Under this definition, it may be added, mats and
ady intimated, are truly but small rugs.
uestion arises: "Into what category does a roll of 'rug
In the manufacture of seamed rugs several strips of
ter, a side or a central strip, for a specific rug are
r another on a single loom. After one such strip has
l, 3 or 4 inches of backing fabric called in the trade
re woven, and then the weaving of the next strip is
manufacture of the rug is to be entirely carried
t factory, the strips will be subsequently cut apart at
he edges of the drop-lea bound under, and these par-
assembled with the others required to make up the
is possible that the rug parts as they come from the
cut, matched, and sewn together, but are merely
sold, or perhaps imported, in that form. What is a roll
a carpet or a rug? Obviously, while such goods may
ed directly under either head, there can be no doubt
integral portions of rugs. The fact that they come to
s does not put them in the classification of carpets of
ernate appellation is roll goods. The strips of rug
ot be used as carpets or roll goods are used. Their
nust be solely in the construction of seamed rugs.

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urnal, Vol. LVIII; July 31, 1920, p. 33.

CHAPTER II.

DOMESTIC MANUFACTURE.

SECTION 1. RAW MATERIALS AND THE TRADE IN THEM.

(A) SOURCES OF WOOL SUPPLY.[1]

With respect to the material of chief value, wool, the requirements of American carpet manufacturers in the matter of quality differ in no particular from the requirements of such producers the world over. The type of fiber desired is a strong, even if coarse, staple possessed of considerable resiliency and luster and available at a low price.

Wools of this character have never been produced to any appreciable extent in this country. As long ago as 1866 a brief prepared by American carpet manufacturers stated: "In the manufacture of carpets *no domestic wools are used*, for the reason that they are not only too costly but too fine to make a serviceable fabric." [2] In fact, from the time that the production of carpets on any considerable scale was launched in this country up to the present day the proportion of domestic wools normally consumed has been negligible. Even under the stimulus of a duty on carpet wools (Class III wools), which at times has amounted to as much as 40 per cent ad valorem, no domestic production of wool suitable for the carpet trade has developed, the reason being that the return from wools of superior quality, which could be produced with little greater cost, was much larger. Some small quantities of abnormally low-grade, coarse domestic wools, particularly from the Southwest, have been employed in this manufacture, and some noils and wastes from superior wools have been used in the production of filling yarns; but the ratio of these materials to total consumption of wool in the carpet industry has been so low that the statement of the carpet manufacturers in 1866 has always remained substantially true.

Some changes have occurred in the sources of supply from time to time. The chief sources during the years immediately preceding the World War were China, the United Kingdom, Russia, Turkey, and the Argentine. The British East Indies should perhaps also be mentioned as of some importance. The United Kingdom held the primary position from 1891 up to 1904, but China has come first in subsequent years, owing in part to the increase in direct shipments from China to the United States, but mainly to the change in preference among domestic consumers in favor of China wools. Furthermore, wool from other sources, such as the British East Indies and

[1] See Appendix A for statistics of imports of carpet wool.

[2] Statement of Facts on Carpet Materials, presented to United States Revenue Commission, 1866, p. 4. Italics as used in the original.

ıised to come almost wholly through the British mar-
ɜ direct.
ingdom is the original source of a substantial quantity
chiefly the so-called black-face wool from the hills of
as been estimated that some 9,000,000 pounds of this
rted annually to the United States during the years
constitutes, therefore, somewhere between 40 and 50
) wools shipped from the United Kingdom to this

ıt time (1922), though to a less extent than during
s being used in the American carpet industry a con-
ity of low cross-bred wools, principally from South
abnormal condition of the market is in part due
situation which makes it difficult to procure carpet
ıa and India (though the decline in silver exchange
)rought an improvement in this situation); it is also
the difficulty or impossibility of obtaining wools
rn Europe and Russia; and in part to the relative
w cross-bred wools in the market, wools which would
to the manufacture of wool cloths, overcoatings,
For these reasons it has become temporarily ad-
utilize River Plate and other South American
aracter indicated in place of the wools usually con-
generally admitted, however, in the carpet-manu-
that the cross-bred type of wool is not well suited
that the quality of the fabric is adversely affected.
hat as soon as the normal supply of wools from
and Turkey becomes available the trade will revert
l imports from South American countries, such
nd Chile, increased markedly during and imme-
World War, but have declined somewhat since then.
Argentina the increase followed almost immediately
ık of hostilities, rising from some 2,000,000 pounds in
)00,000 pounds in 1915, and to more than 14,500,000
Even in 1921 (calendar year) imports were 10,181,-
ıe increase in the case of Chile was even more radical
ch its maximum as quickly. From 16,000 pounds
ɔ a level of over 3,000,000 pounds in 1916 and 1917,
; had reached the figure of over 16,000,000 pounds,
thereafter to a negligible quantity in 1921. These
ıiefly due to the diversion to American ports of
as cross-bred wools, which had previously gone to

THE TARIFF ON IMPORTATION OF CARPET WOOLS.

ɔn of the statistics showing the imports of carpet
further that the tariffs upon such wools have had
the quantity brought into this country. The aver-
ɜ under the several tariffs were as follows:

indeed, this recovery appears already to have taken place. Domestic imports
ot fall off during the war to the same extent as from Russia and Turkey—were
year 1920 (37,182,717 pounds) than during any other year since 1900.

Table 1, average imports for consumption, per year of 365 days, of Class III wool, under various tariff acts, are found to contrast as follows:[1]

Tariff acts.	Days in operation.	Average per year of 365 days.			Equivalent ad valorem rate.	Relative annual quantities (imports for 1890 used as basis).
		Quantity.	Value.	Duty collected.		
		Pounds.			*Per cent.*	
1890	1,422	74,957,776	$7,334,430	$2,427,286	33.09	100
1894	1,062	121,940,233	11,829,497	.....	.....	163
1897	4,394	91,114,151	10,283,922	4,092,614	39.80	122
1909	1,520	103,915,186	13,732,964	5,150,522	37.50	139
1913	3,275	90,288,612	21,591,301	.....	.....	120
Five acts	11,673	93,385,794	13,686,770	[2] 2,506,926	[2] 18.32	125

[1] This contrast of imports for consumption of Class III wools (including Class III camel hair) under five tariff acts covers the priod of 11,673 days from Oct. 6, 1890, to Sept. 21, 1922, inclusive.

[2] Duties collected per year under the acts of 1890, 1897, and 1909 averaged $3,485,808, and the equivalent ad valorem rate during these three dutiable periods averaged 37.98 per cent ad valorem. Table 1 is a condensation of a more complete table, showing imports for each year, given in Appendix A.

It will be observed that the average annual importations under the free-wool provisions in the tariffs of 1894 and 1913 were little different from the imports under the so-called protective tariffs of 1890, 1897, and 1909.

The fluctuations in importations will be seen, if the imports year by year are examined, to follow more closely the movement in general economic conditions of the country than in tariff changes. After the economic crises of 1893, 1900, and 1907, there were marked drops in the total amounts of wool brought in.

One important conclusion may be drawn from the peculiar feature of the importations referred to—the failure of the inward movement to respond to a reduction in tariff rate, together with the known lack of a competitive source of supply in the United States; namely, that the duties levied in preceding tariffs on the imported material have been passed on by the domestic users to the ultimate consumers of the completed carpets. As a revenue measure, the duty on carpet wools no doubt has some points in its favor; but it may be noted that carpet manufacturers have to a limited extent been handicapped by the import duties on Class III wool, through the necessity of carrying their stocks of wool in process of manufacture at the higher, duty-paid prices.

(C) ORGANIZATION OF THE WOOL TRADE.

The chief market for carpet wools in the United States is Philadelphia, although New York and Boston are centers of some importance. This localization follows that of the carpet manufacture. The latter is concentrated in a peculiar degree in and about Philadelphia, with scattered factories in the States of New York, Connecticut, and Massachusetts.

The firms dealing in carpet wools are to some extent specialized, handling wools from particular regions such as China and East India. Other firms are dealers in a wide variety of carpet wools and sometimes in wool of better quality. A few firms in the trade possess international connections, having agents and offices distributed over most of the wool-producing and wool-consuming countries of the world.

Importing dealers, except those with offices or agents in the wool-producing countries, purchase mainly from exporting merchants in

entina, and the other carpet-wool areas. The lat-
ool from the interior, through native dealers or
agents; sometimes grade it roughly and bale it,
oment to the consuming countries. Sales effected
ie result of private negotiations between the ex-
porters. Auctions are another source of supply,
India wools. These auctions, which regularly occur
in the past been the chief means of distribution
y India wools to the wool-consuming countries of
inent, and the United States. But in two respects
through these auctions has been altered during
e larger American carpet manufacturers have sent
atatives to Liverpool and have thus purchased the
tead of through American importing merchants.
of Indian wool directly to American ports and
ing merchants have increased, and the Liverpool
likely to play the part in the carpet-wool trade
played in preceding decades. One effect of these
not escape attention. Under the earlier situa-
manufacturers and merchants enjoyed certain ap-
ges. Not only were they able to secure first choice
ip at these auctions, but, by virtue of proximity to
rtation charges to the British carpet factories were
than the charges, including those for lading and
hich American purchasers had to pay. Through
ith Indian, Russian, or other merchants, as well as
d in the various carpet-wool countries, American
abled to compete for such wools at their places of
transportation directly to this country there is a
ing in freightage and other costs. By representa-
erpool sales, American manufacturers, of course,
nt of intermediate profits to merchants and brokers.
of these changes in procedure, the competitive posi-
carpet manufacturers has been materially strength-
ie acquisition of wool supplies is concerned.

b) TRADE IN OTHER RAW MATERIALS.

other than wool are purchased by American carpet
with hardly an exception, in the form of yarns already
f of these yarns, at least from the point of view of
The raw jute is produced wholly in India, whence
o this country. Some small importation of yarns,
tland, has occurred in the past—for example, 1,338-
re imported for consumption in 1914—but as the
jute yarns in the domestic carpet industry in that
imately 59,000,000 pounds, the importation would
l any considerable part had it all gone into the pro-
ets. Obviously, therefore, the jute yarns used in the
et industry are, in the main, manufactured in this

which are next in importance, are of domestic origin
ct to the raw material and to the fabrication. Prac-
n yarns for the carpet trade are imported.

1921, it is true, imports of jute yarn amounted to 9,391,090 pounds—an unprecedented this was but a minor portion of the total consumption.

The flax employed in the manufacture of linen yarns, the only other material of major significance, is practically all produced abroad. Before the war, Russia was the principal source of supply, while lesser supplies, though generally of superior quality, came from Ireland and Belgium. It has been imported in the unmanufactured form, and worked up in domestic flax-spinning mills. There has, to be sure, been substantial importation of linen yarns, but not of the counts commonly employed in the carpet industry. Hemp yarns (generally of domestic manufacture, from Italian hemp) are also used to some extent.

This peculiar situation of the American carpet manufacture with respect to its materials should be noted; aside from perhaps a small amount of domestic hemp, only the cotton used in the industry is produced within the United States, and that forms probably less than 15 per cent of the total weight of materials consumed. Wool, jute, and flax are all of foreign origin.

SECTION 2. METHODS AND MECHANICAL EQUIPMENT.

(A) INVENTION OF MACHINERY.

The picture presented by a summary (necessarily omitted here) of the chief inventions in the carpet industry is extraordinary. Few American industries can show such a record of ingenuity and independent development; in some ways the most encouraging feature of the situation is the continued effort of the American manufacturers and machine builders and their continued success. They are not without competition from Great Britain, but apparently they are able to hold their own. With respect to the manufacture of the machines actually in use the situation is not so favorable.

(B) DEVELOPMENT OF WIDE LOOMS.[5]

The development of wide looms in the carpet industry forms a special feature in its history. It marks the definite ascendancy of the rug production, as contrasted with the carpet or roll-goods manufacture; and it has been the source of greatly increased expenditure by carpet mills for necessary equipment. To be sure, a majority of the looms used in the carpet industry, whether in the United States or in Great Britain, are still of the narrow type: but the wide type is spoken of throughout the trade as the "coming" loom. In the American industry, 3,286 "rug" or wide looms were reported in 1914, as compared with 6,423 "carpet" or narrow looms. In the mills from which the commission secured direct returns of equipment, 1,854 rug looms were reported, and 4,831 carpet looms.[6]

[5] See Appendix D, pp. 128, 129.

[6] These looms were divided as follows:

	Rug looms.	Carpet looms.
Brussels and Wilton	68	1,593
Tapestry and velvet	[a] 949	[b] 1,199
Axminster	446	1,770
Chenille Axminster	[c] 205	[d] 52
Smyrna	79	94
Ingrain	107	123
Total	1,854	4,831

[a] Includes a number (less than 116) of Wilton looms.
[b] Includes a number (less than 57) of Wilton looms.
[c] Including 32 weft looms.
[d] Including 6 weft looms.

in the industry as a whole, however, has been toward wide looms is indicated by the census of 1919, which ide or "rug" looms as compared with 3,976 narrow

in the use of wide looms may be most clearly ob- ummary which follows, based on census reports:

of narrow and wide looms of the several types in the carpet industry, 1899–1919.[1]

1904	1909	1914	1919		1899	1904	1909	1914	1919
				Smyrna:					
549	636	548	347	Narrow	.....	.....	.....	19	33
.....	.....	.....	2	Wide	2,313	1,694	1,021	479	380
				Ingrain:					
639	956	1,387	262	Power—					
71	62	134	963	Narrow	4,434	4,277	2,902	1,179	439
				Wide	246	412	788	641	192
2,254	2,154	1,646	1,817	Hand—					
236	526	[2] 944	506	Narrow	92	85	27	.....	.....
1,433	2,562	1,644	1,078	Wide	1	42	7	.....	.....
.....	.....	1,086	1,067						

r rag carpet and rug looms.
f 1914 into 562 tapestry and 382 velvet rug looms.

REIGN-MADE AND DOMESTIC-MADE MACHINERY.

ı between the quantity of machinery of domestic ctually in use in domestic mills of a given industry, amount of machinery in use has by some observers, ed as an important indication of the self-sufficiency of that particular industry. The Tariff Commission uiry into the number of American-made and foreign- ı the domestic mills, since looms are the most import- chine in the carpet manufacture. The results of the re presented:

ıtry of origin of looms employed in American carpet industry in 1920.

oom.	Narrow looms (36-inch and under).			Wide looms (over 36-inch).		
	United States.	United Kingdom.	Other.	United States.	United Kingdom.	Other.
.....	781	812	.....	44	17	7
.....	[1] 1,147	52	.....	[2] 758	191	.....
.....	1,720	.....	50	446	.....	.....
.....	[3] 48	3	1	[4] 156	[5] 43	6
.....	94	.....	.....	79	.....	.....
.....	123	.....	.....	107	.....	.....
.....	3,913	867	51	1,590	251	13

ıumber (less than 57) of Wilton looms.
r (less than 116) of Wilton looms.
eaving looms.
[4] Includes 11-weft weaving looms.
[5] Includes 21-weft weaving looms.

are, on the whole, distinctly favorable to the American ıe proportion of foreign-built looms employed in the velvet, Axminster, and even in the rather recently nille Axminster manufactures is really unimportant. ıber of machines are likely to be imported for purposes

of experimentation, to fill particular needs, to please particular foremen or manufacturers, and for other incidental reasons. Unquestionably the domestic market for the above-mentioned types of loom is controlled by American machine makers.

With respect to the Brussels and Wilton looms, however, the situation is not so satisfactory. The number of narrow machines of British makes is slightly greater than the number of such domestic-made machines; and in the matter of wide looms, somewhat over one-third are of foreign origin. The greater number of the imported wide machines have come from Great Britain, but some of the widest (9 feet wide, for example) are understood to have come from Germany.

Smyrna looms are entirely of domestic manufacture, as is to be expected from the fact that the rugs themselves are made entirely in the United States. Looms for weaving ingrain, the manufacture of which has been the longest established among the different types of carpetings, are of domestic make.

This special condition in the Brussels and Wilton manufacture is due in part to historical and in part to technical causes. The power loom evolved by Bigelow for these goods was taken up actively by the British carpet manufacturer Crossley, who purchased Bigelow's patent rights for the United Kingdom. It was to a considerable extent improved by him, and the production of these looms established in that country; this fact explains the large proportion of looms of British origin instanced in the figures of Table 2. The British machine makers have, moreover, always been known for the excellence of their work. An example of the difference between English and American practice in this line, at least of some years ago, is furnished in connection with the ingrain looms of American design which were imported into the United Kingdom. It is reported that the Murkland and later the Crompton and the Knowles looms of this type were borrowed from the American industry. The first were of American construction. "They were, however, soon superseded by productions of English makers, as the American were found too poor—castings being used where hammered iron and steel are employed in the English loom."[7] However, the substantial and, it is believed, increasing proportion of American-made machines employed in the domestic industry, together with the recent development in the stationary-wire loom for this manufacture, indicates that some of the obstacles in the way of production within this country of machines for use in the Brussels and Wilton weaving have been overcome.

Section 3. Size and Character of the Domestic Industry.[8]

(a) Growth of the Manufacture.

The beginning of carpet manufacture in this country dates back to the last years of the eighteenth century. No record exists of the domestic production of carpets for sale prior to 1790, and of course the first attempts at manufacture were on a very small scale, practically handicraft work. Indeed, the advance before 1860 was particularly slow and halting. The census of that year discloses an industry in which the number of "hands" per establishment was only 31. The manufacture, then, was really on a work-shop basis.

[7] Special Consular Reports, 1890, "Carpet Manufacture in Foreign Countries," p. 299.
[8] Based on census figures for 1919.

nd 1890 the industry made its most rapid growth, of employees rising from 6,683 in the former year atter. Subsequently the rate of its expansion de- d the maximum in number of wage earners, 33,307, is an increase of only about 15 per cent in 20 years. ber of wage earners had absolutely decreased to 9 to 22,933, but that may be explained by peculiar ons. Other statistics, however, indicate that the stood still during these years, although if measured hands employed a slowing down is obvious. For al invested has increased steadily from 1890 to the 1860 it was reported to amount to $4,721,938; by 8,842; by 1914, $85,153,828, and by 1919 it had 461. Obviously the amount invested has increased the number of employees. Thus the amount of capi- employee in 1860 was $707; in 1890, $13,297; in in 1919, $5,196. The increase in the last 25 years eworthy. Again the statistics of the value added .. e., the value of the products above the cost of the e shows sustained progress by the industry. From 790 in 1860 it reached $19,125,288 in 1890, $26,847,- 35,789 in 1919, and $53,156,000 in 1921. The 1914 was a decline from that reported in 1909,[9] $31,625,- able on the ground of depressed business conditions. ustry is in a healthy, expanding condition, although especially to its working force in recent years.

(B) GEOGRAPHICAL DISTRIBUTION.

re of carpets is an exceptionally concentrated indus- it confined to the northeastern tier of States, but to hat group, namely, Pennsylvania, New York, Massa- rsey, and Connecticut, arranged in sequence accord- er of establishments in each State. The details of distribution as of 1914 and 1919 are shown in the ion:

	Pennsylvania.		New York.		Massachusetts.		All other States.		United States.	
	1919	1914	1919	1914	1919	1914	1919	1914	1919	1914
.....	48	63	10	14	10	12	[a] 7	[b] 8	75	97
.....	7,626	9,569	9,073	12,540	3,134	5,319	[c] 3,100	3,881	22,933	31,309
arn-	159	152	907	896	313	443	443	485	306	323
rpet	3,376	4,307	2,925	3,089	1,085	1,474	[d] 1,870	982	9,256	9,852
per	70	68	293	221	109	123	270	122	123	102

, Connecticut 1, and Wisconsin 1.
, Connecticut 3, and Indiana 1.
Connecticut, and Wisconsin.
and Connecticut, and mills in Pennsylvania and New York, where 1,099 looms than carpets and rugs.

te of advance has been peculiar. The value produced by each operative has average of $1,176 just before the Civil War, it had become only $665 in 1890. By t had reached $857; which itself was a decline from the 1909 figure of $950, but by

In respect to the scale on which production is conducted, the peculiar position of Pennsylvania, and to a less extent New Jersey, is evident. While the former State possessed practically two-thirds of the total number of establishments, it held less than a third of the total number of employees, and only a little more than 40 per cent of the looms. Indeed, Pennsylvania is and has always been the home of the small producer and of the concern which devotes itself to carpet weaving alone. The fact that many of the concerns in New York, Massachusetts, and Connecticut maintain their own wool-spinning departments explains for the most part the particularly large proportion of total wage earners in those States, as compared, for example, with their ratios of looms.

The distribution of the carpet manufacture in 1914 and 1919 according to the several branches of the industry is presented in the following table, showing the number of looms of the various types contained in the five States above mentioned:

TABLE 4.—*Number of looms in the domestic carpet and rug industry: 1919 and 1914.*[1]

Kind.	Pennsylvania.		New York.		Massachusetts.		Connecticut.		New Jersey.		Indiana.	United States.	
	1919	1914	1919	1914	1919	1914	1919	1914	1919	1914	1914	1919	1914
Brussels and Wilton:													
Carpet	131	663	275	292	155	759	48	127	.....	94	.....	609	1,935
Rug	633	89	58	42	185	5	110	.....	24	.....	.....	1,010	136
Tapestry and velvet:													
Carpet	1,054	1,005	620	305	22	170	121	166	.....	.....	.....	1,817	1,646
Rug	81	190	275	633	33	.....	86	75	31	46	.....	506	944
Axminster:													
Carpet	151	230	751	744	170	364	6	272	.....	34	.....	1,078	1,644
Rug	208	203	614	778	3	6	165	64	77	35	.....	1,067	1,086
Smyrna:													
Carpet	27	12	6	7	.....	.....	.....	.....	.....	.....	.....	33	19
Rug	77	303	242	168	.....	.....	.....	.....	61	8	.....	380	479
Ingrain:													
Carpet	418	1,099	45	76	.....	52	.....	47	.....	.....	11	463	1,255
Rug	529	418	24	29	288	118	.....	.....	42	.....	.....	863	565
Total:													
Carpet	1,781	2,979	1,697	1,424	347	1,345	175	612	.....	128	11	4,000	6,499
Rug	1,528	1,203	1,213	1,650	489	129	361	139	235	89	.....	3,826	3,210

[1] Excludes Colonial or rag carpet and rug looms.

It will be noted that, taking the aggregate number of looms of each type, the manufacture of ingrain was largely localized in Pennsylvania, as indeed it has always been particularly concentrated; again, that the proportion of Axminster looms was especially high in New York State; that the manufacture of tapestry and velvet was for the most part monopolized by Pennsylvania and New York, these two States operating 82 per cent of all such looms in 1914 and 87 per cent in 1919; while the production of Brussels and Wilton was somewhat more scattered, approximately two-thirds of these looms being located in Massachusetts and Pennsylvania, and the rest divided among New York, Connecticut, and New Jersey. Of rug looms alone, the concentration was different in certain respects. In 1914 the proportion of these wide looms of the Axminster type located in New York was even higher than the proportion of all Axminster looms so located, around 75 per cent instead of 60 per cent, but with the increase in the number of wide looms in other

914 and 1919, particularly in Pennsylvania and York's ratio stood in 1919 at only 57 per cent for ast 68 per cent for all looms. Again, the tapestry oms of New York State formed a particularly great such looms—in 1914, over two-thirds of the total ast 36 per cent of all looms; in 1919, over half of the s against 38 per cent of all looms. On the other ia's tapestry and velvet looms were predominantly arpet variety, her looms comprising 61 per cent in cent in 1919 of all machines in that branch of the rug looms formed only 20 per cent of the total in ent in 1919. In the Brussels and Wilton manufac- ly exclusive possession of wide looms was a feature t the striking increase in the number of wide looms and Connecticut during the war period is also note-

trend away from the peculiarly great centralization ustry in and about Philadelphia which marked the entury ago. Even in the 15 years covered by the id 1914, the movement is evident. In the former ia is reported to have supplied 56.3 per cent of the ion, calculated on the basis of quantity, and 44 per asis of value. In 1914, the corresponding per- 3.3 and 33.4 In 1919, the figures were 33.3 per r cent, respectively. On the other hand, Massa- rk, and "all other States," of which Connecticut is ant, have enhanced their shares appreciably. On ity the output of New York mills increased between om 28.5 per cent to 36.2 per cent of the total; that from 9.6 to 12.4 and that of mills in all other states). In other words, while the industry shows no e away from the group of states in which it has ed, the portion which each shall contain has been cation.

is shift in proportions by which Pennsylvania has in both quantity and value of production are in be found in the fortunes of individual concerns. general causes may be noticed the difference in oncern between the Philadelphia region and others. s operating in New York, Massachusetts, and Con- he large-scale type, whereas the majority of firms hia district are and always have been of small he advantages arising from the manufacture of ore extensive scale are an important factor in the from Philadelphia. Moreover, there is a certain veness in the Philadelphia mills, which, quite apart e size, is an obstacle to their successful competition ade. They suffer to a material extent from the fact ndustry went through its early development in that esult, mills are not well arranged, buildings are old, must be carried on under serious obstacles to effi- phase is spoken of by a trade paper of the wool connection with a discussion of the Philadelphia : "The whole trouble with the ingrain business is

the fact that manufacturers of ingrains (who, as has been pointed out, have been largely confined to the Philadelphia district), are slow to see a change in the desires of consumers, did nothing to counteract that change, but went ahead manufacturing ingrains, while the people were being educated to the use of higher-cost carpets and, on the other hand, rugs and straw mattings."[10] More recently, the manufacturers of ingrains have turned to the production of wool and fiber (paper) fabrics, although they there come into competition with strong companies which developed that type of floor covering.

(c) QUANTITY AND CHARACTER OF THE DOMESTIC PRODUCTION.

1. *Quantity of production.*[11]—The domestic production of carpets since 1899 is presented in the following table compiled from census returns:

TABLE 5.—*Aggregate production of all types of carpeting.*

	1919	1914	1909	1904	1899
Square yards	52,181,512	66,340,274	81,218,881	82,670,843	76,410,050
Value	$110,151,089	$64,683,322	$66,966,338	$56,861,775	$43,579,682

These statistics give evidence of the comparatively slow growth of the industry since 1890. The apparent decrease for 1914 does not signify an actual decline in productive capacity. A number of causes contributed to the reduction of output for that particular year. Among them should be noted the uncertainty and indecision in the carpet industry itself arising from the change in the tariff on carpetings which went into effect January 1, 1914; a general depression in business; and the disturbance of economic conditions following the outbreak of the European war. Unsettled conditions in the carpet industry and a conservative policy were the effect not of actual importations of carpet goods, which were not particularly great, but rather the fear of them. Manufacturers wished to feel out the new situation in which the new tariff was a factor of importance. Under more favorable general economic and business conditions it is probable that the change in the tariff would have seemed of less consequence. The further decline in output in 1919 was in large part the result of curtailment of consumption resulting from war conditions, and the low figure in 1921 is due both to depression and a strike in certain branches of the industry.

The statistics also show that although production has been almost stationary, values have mounted materially since 1899. The increase in the value per square yard has been rapid and persistent, from 63 cents in 1899 to 97 cents in 1914.[12] In part this advance has been due to a decline in the value of the dollar; but in greater measure it may be traced to changes in the character of carpet production.

Statistics of production appearing in the census of war commodities, 1918, show decreased production during war years. Converted into square yards, the production for the years 1915, 1916, and 1917,

[10] American Reporter, May 8, 1913, p. 594.
[11] See Appendix B, p. 126.
[12] The advance to $2.11 per square yard in 1919 was, of course, due in large part to war conditions, and the average of $1.88 represents a partial survival of those conditions.

in this census, was as follows: 51,425,085 square square yards, and 45,076,556 square yards, re- figures may be slightly inaccurate, since some uded in the process of converting the figures from ich the production is given in the census to the but they appear to be reasonably plausible in the uent figures of the 1919 census.

roduction among types of carpeting.—The division oduction among carpetings of the several types, production since 1899, appear in the following es.[13]

n of domestic production among the several types of carpeting.

[Basis: Quantity.]

arpet.	1919	[1] 1917	1914	1909	1904	1899
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
.....	28.34	26.85	23.73	19.32	9.90	7.01
.....	9.57	10.93	8.47	6.58	2.90	5.14
.....	1.74	2.16	4.07	5.46	3.66	3.52
.....	19.02	13.08	19.94	13.13	9.72	5.60
.....	19.27	28.78	20.52	21.03	19.49	11.46
.....	2.31	6.61	8.74	21.92	40.59	52.25
.....	1.53	7.02	4.79	7.55	8.63	3.56
.....	1.56	2.74	1.24	1.72	4.63	4.78
.....	13.15	.....	6.28	.....	.....	.....
.....	.60	.....	.27	.....	.....	.....
.....	2.86	1.23	1.96	3.30	.49	6.69
.....	100.00	100.00	100.00	100.00	100.00	100.00

[Basis: Value.]

carpet.	1919	[2] 1917	1914	1909	1904	1899
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
.....	32.39	.....	28.72	25.94	14.91	11.72
.....	21.41	.....	18.44	15.11	8.28	10.31
.....	2.04	.....	6.18	8.86	6.86	6.84
.....	18.81	.....	19.89	13.48	13.64	8.60
.....	11.97	.....	15.23	19.41	20.16	12.70
.....	.96	.....	3.47	10.07	23.36	32.99
.....	.65	.....	1.80	3.60	4.90	2.70
.....	1.75	.....	1.35	2.49	7.27	8.45
.....	5.70	.....	2.37	.....	.....	.....
.....	2.31	.....	1.12	.....	.....	.....
.....	2.01	.....	1.43	1.61	.62	5.49
.....	100.00	.....	100.00	100.00	100.00	100.00

[2] are based on the statistics presented in the war census of 1918. It is believed are not in material error. At best, however, the statistics contained in this in them, should be used with caution.

hat in recent years, on the basis of quantity, Axmin- uted around one-quarter of the total domestic pro- s (tapestry Brussels), from one-fifth to one-fourth; velvet), from one-eighth to one-fifth; Wiltons, about iat among the remainder the wool and paper fiber ingrain weave) has been a newcomer of increasing the basis of value, however, the ratios are changed

[13] See Appendix B.

some particulars, especially in that Axminsters play an ev
smaller part in the total value than in total yardage; that bo
Wilton exceeded in value of product the tapestr
and turned them in the basis of quantity; and that t
and velvet-chenille productions appear much less importa
in point of view of value than from that of yardage, registeri
for example, only 5 per cent together for value as compar
per cent in quantity.

The most striking and in some ways most significant change is t
in the proportion of the total output represented by ingrai
At the present time there is practically no manufacture of a
ingrain and very limited quantities of ingrains in which t
are used for warp yarns. The looms have either been scrapp
and are now taken up on tapestry or Axminster looms or they ha
been turned to the production of substitute and cheaper forms
of floor coverings such as wool and fiber goods. The narrow ingra
looms reported in existence in 1919, a large proportion of whi
were undoubtedly engaged on these substitute fabrics, were less tha
one-seventh of the number in use 20 years before, and the numb
of looms had decreased about one-eighth from the high poi
reached in 1904.

Causes of this decline are not hard to find. The trend of a lar
part of the domestic market has been toward a more luxurious ty
of floor covering, especially a plush-pile fabric, and competitio
has been intensified by the gradual reduction in the cost of man
of these pile fabrics, such as Axminster and velvet. Furthe
competition has increased in strength from a class of goo
other than ingrain, especially straw matting, wool and fib
fiber rugs and grass rugs. Subjected to pressure from either sid
many mills have often abandoned the field. As early as 19
looms which had cost $600 were reported to be selling for
Among the causes may be mentioned also the disadvantage arisi
from the small size of the usual ingrain mill and the unprogressivene
of many ingrain manufacturers.

A similar decline in production took place in Smyr
rugs. In annual yardage the production had fallen by 1914,
to a quarter of the figure for 1899 or 1904. The reaction shown
for 1917 is believed to be more apparent than real, arisi
from the fact that production was reported in linear yards, of whi
fewer square yards contain. It seems probable that at best the Smyr
industry did not grow during the period 1914 to 1917, a probabili
not clearly brought out by the 1919 census, which shows prac
no change whatever since 1914 in the production of Smyrnas. As late
as 1919, only three or four mills in the country were making Smyrna
rugs on power looms, at least the majority of the looms were report
as being hand looms. Moreover, the manufacture has shrunken

[illegible] comparable numbers of looms, using the number in use in 1899 as a base, run as follo

	1899	1904	1909	1914	1918	191
[illegible]	100	96.2	66.2	28.7	19.7	
[illegible]	100	167.5	320.3	231.3	201.6	2

ɔt until practically the only form of goods turned
ich in size runs from 30 by 60 inches downward.[15]
of Smyrna rugs has suffered through the develop-
ugs in the Axminster, Wilton, tapestry, and velvet
. Its production was likwise handicapped by the
ɔor required. The Smyrna fabric is not considered
ɛ of carpeting as the chenille Axminster and can
he additional labor cost. Moreover, the Smyrna
a peculiar way from the competition of jute rugs.
ɜrial, made up in imitation of the wool Smyrna
ɔy one or more manufacturers of jute floor covering
ade under the same name. While the jute goods
initial appearance they did not "stand up" as the
and the latter suffered through the disrepute into
ɜs fell.
ɔoportion of Brussels production is to be explained
ɔreference among domestic consumers for plush-pile

strength in the tapestry manufacture is to be
by the fact that some of the demand released from
has been transferred to the imitation material; but
t employment of a large yardage in the automobile,
r covering of machines. The fabric used in this
is usually of a single color and often of such inferior
nacceptable as ordinary carpeting; but it is similar
ave and general method of manufacture.
fabrics as a whole, Axminster, Wilton, and velvet,
cale of production and of relative position in the car-
asing on the basis of quantity from 17.75 per cent of
ɔ production in 1899 to 52.14 per cent in 1914, and
1919, and on the basis of value advancing from
1899 to 67.05 per cent in 1914 and 72.21 per cent in
ds exhibit in general the same trend; there are
tions.[16]

ɪber of Smyrna power looms, expressed in index numbers, with 1899 as a base, g schedule:

	1899	1904	1909	1914	1918	1919
.....	100	83.3	70.9	35.8	69.4	17.9

ɜis due, it is believed, to the reporting of machines actually in existence, whereas ooms actually in use. In addition to the decline in power looms, there was a ɪd looms, from 955 machines in 1899 to 11 in 1914.

n the number of power looms, reduced to index numbers with 1899 as a base, ther than ingrain and Smyrna is herewith presented:

	1899	1904	1909	1914	1918	1919
.....	100	100.9	116.9	101.1	81.2	70.6
.....				71.3	65.4	109.3
.....	100	135.8	146.1	69.8	85.1	67.4
.....	100	188.3	336.7	358.7	319.0	281.8
.....	100	131.2	192.4	287.5	326.5	212.6

ɪ by these figures, however, is somewhat erroneous in the case of the Axminster elvet looms, since there has been a large introduction of wide looms in these

ɪ

3. *Division of production among forms of carpeting.*—The proportions among the three forms of carpeting, as shown in the censuses of 1914 and 1919, are given below:

TABLE 7.—*Relative production of carpets or roll goods, seamed rugs, and seamless rugs in the domestic industry, 1919 and 1914.*

Type of carpeting.	1919			1914		
	Carpets or roll goods.	Seamed rug.	Seamless rug.	Carpets or roll goods.	Seamed rug.	Seamless rug.
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
Wilton	24.73	59.52	15.75	33.9	63.6	2.5
Brussels	16.46	82.40	1.14	25.7	74.1	.2
Velvet	44.36	13.10	42.54	36.7	22.0	41.3
Tapestry	20.01	1.17	78.82	19.2	20.0	60.8
Axminster	13.77	49.04	37.19	9.2	61.2	29.6
Smyrna	.....	.....	100.00	.....	.....	100.0
Chenille Axminster[1]	.....	.....	100.00	.....	.....	100.0
Ingrain	59.38	.....	40.62	64.6	.....	35.4
Wool and fiber[1]	.....	.....	100.00	.....	.....	100.0
All types	23.06	24.04	52.90	26.1	31.4	42.5

[1] The above statistics, drawn from the census of 1914, are erroneous in at least two respects. The chenille Axminster manufacture is by no means limited to seamless rugs. A large portion of its output, and perhaps a quantity superior in yardage to that in the seamless rug form, is produced in rolls of goods usually 9 or 12 feet wide, and of a single color. Again, the wool and fiber production is also not wholly of seamless rugs. A portion of the output is in the form of roll goods, although here normally but a yard wide

Nearly three-quarters of the domestic production is in the form of rugs. Only in the ingrain (which embraces some wool and fiber) production does the old carpet retain any substantial place. Likewise, the new position of the seamless rug is apparent. The production of approximately 37 per cent of the Axminster goods in this form is extraordinary, when one considers the relative novelty of the wide Axminster machine; while the magnitude of the proportions in the velvet and tapestry manufactures and the increase shown in 1919 in the case of the Wiltons are both remarkable.

The future of roll goods is obscure. There is seemingly a certain limited demand for carpeting in this form which will not wholly disappear, as, for example, the requirements of the automobile trade. Yet hardwood floors are becoming more prevalent, and it may well be that the scale of the roll goods production will suffer further curtailment.

Of the rugs, the feeling quite generally in the marketing branch of the industry is that the seamless fabric will grow steadily in favor. However, there are deterrents to such a movement, as, for example, hesitancy on the part of manufacturers to scrap their narrow looms, and in the Wilton and Brussels trades a lack of adequate equipment. Seemingly the change will be gradual but constant in the direction of the seamless goods.

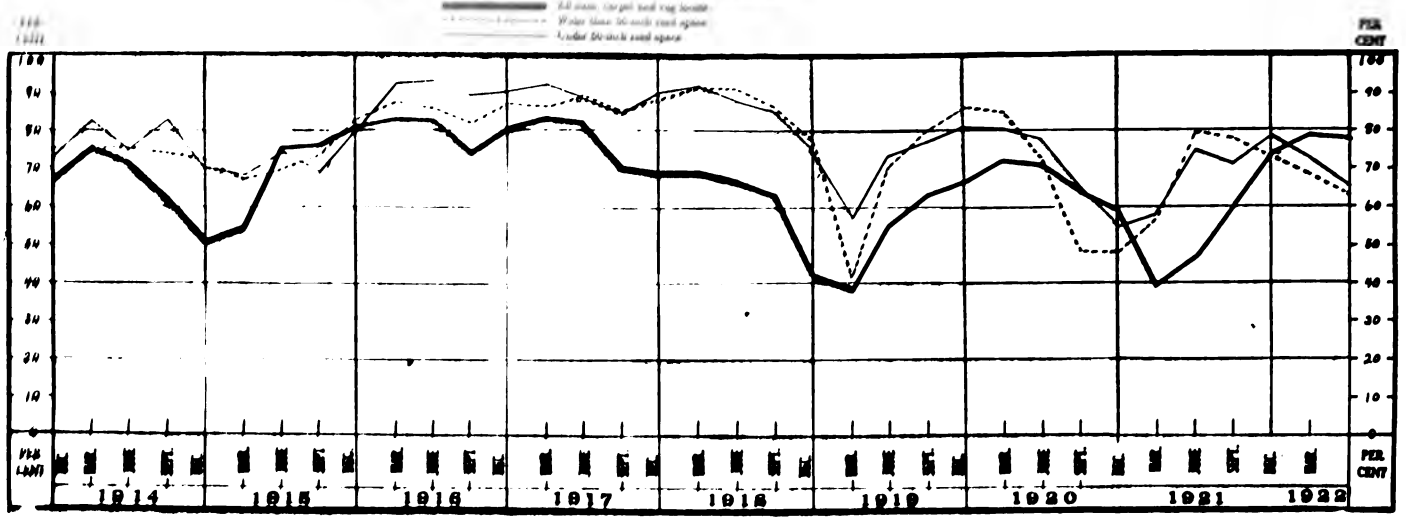
4. *Quality of domestic production.*—Quality in rugs and carpets is mainly a matter of frames, wires, and ends, which form the construction of the fabric, and is not determined to a great extent by the quality of the constituent yarns, which plays so important a part in woolen and worsted cloths. Fineness of fabrics, that is, a high number of the constituent elements above mentioned—means, in general, superior goods in appearance and durability, because of the greater compactness of the texture.

great diversity of the grades manufactured, com-
and American products can be drawn only in
average product. It may be said that, on the
products of the Brussels and Wilton, tapestry,
re more often woven of lower pitch and wire than
ision is made in the British wage scale for pro-
seven frame fabrics, while American production
, but almost always confined to five-frame goods.
insters the American products are substantially
in quality; the manufacture of such goods in the
ists almost wholly of wool-backed goods, whereas
substantial proportion of the production is made
fabrics.

HISTORY OF INDUSTRY SINCE 1913.

rug industry has undergone many vicissitudes in
some extent these are shown in the accompanying
the percentage of active carpet and rug looms
riod. For purposes of comparison, lines are intro-
art, showing the percentage of active looms in the
tion.[17]
l that there have been three periods of particular
The first one, which covers the greater part of
1914, is attributable to the general depression
whole country, to the particular uncertainties in
ig industry itself, and to the conditions brought
break of the European war. It will be observed
, and more particularly in 1916, conditions became
rmal and so continued until the outbreak of hos-
ie United States and the Central Powers.
riod of extraordinary inactivity in the industry,
m the latter part of 1917 until the beginning of
up with the general control of industry by the
ment. During the war the carpet and rug industry
the War Industries Board as nonessential, and in
able to secure but relatively small supplies of wool
ssary materials, while its labor force was cut down
en for the service. However, the effects incidental
n of the war were nearly, if not quite, as great as
ributable to governmental action. By the control
lies of carpet wools were seriously curtailed; and in
upplies of jute and linen yarns which are imported
raw materials are imported. Again, such yarns,
uired for war purposes, were not readily or abun-
for carpet manufacture. Perhaps more important
n of labor from the carpet and rug mills to the
ustries. In this relation the factories of the carpet
ture were unhappily situated. Many of them, such
id around Philadelphia and New York, were in or
where great demand was made for war workers. In
as Thompsonville, Conn., and Amsterdam, N. Y.,
ries were not immediately at hand, they were not

Chart C.—PERCENTAGE OF ACTIVE LOOMS IN WOOL MANUFACTURE.



were able to draw many workers from carpet

ers of carpets and rugs attempted to adapt their
roduction of materials essential to the prosecution
accepted orders for blankets and for cotton duck,
d their wool-spinning capacities for the production
sted yarns to be employed by other factories in
nilitary cloth. Many of the looms of the industry,
fitted for the production of blankets or duck, par-
ooms. The adaptation of narrower looms necessi-
es in the operating method of these machines, oc-
over considerable periods, especially since the sup-
anics needed for this work was depleted by their
tile mills operating more largely on war contracts
f war production.
ught about in this period, especially those which
the prosecution of the war, have had a long dura-
supplies of raw materials were reconstituted with
ness,[18] the labor which had been drawn away from
as not soon attracted to them again. Some of the
those at Thompsonville, Conn., and Amsterdam,
communities of only semiurban character. In con-
orkers who had been drawn to the large centers,
and New Haven, Conn., or Albany and New York
to remain there for reasons quite apart from the
manufacture or perhaps even the ratio of wages.
ssity of readapting the looms to the production of
considerable idleness of machinery, which was
same shortage in mechanics already noted. The
vities in the industry was therefore long delayed, so
upward trend of 1920 reached the high point which
or to the entrance of the United States into the war.
d of inactivity set in during the fall of 1920, and
in March, 1921. A strike of long duration in the
els branches of the industry was probably the lead-
decline, although slack demand attributable to the
was also a factor. Finally, however, with the
building operations in late 1921 and 1922, a fairly
f the looms have again become active.
al feature of the carpet trade after 1913 (at least
s been the deterioration in quality of product. To
s but a continuation of the process which had been
913, to which reference has already been made, for
to the Axminster production. The existence of a
of this character is further indicated in the statis-
mployed in the whole carpet industry. Figures of
ool yarns consumed in the carpet manufacture in
licate that whereas in the first year these materials
ent of the weight of the yarns used, they had de-
ater to 45 per cent.
lly, there was an intensification of the movement
result of wartime conditions, although the action
. The appreciation in the price of raw materials

lty in securing supplies from the old sources, but other wools, e. g., South
l.

[illegible]

[illegible] SIZE OF THE [illegible] ESTABLISHMENT.

[illegible]

Industry.	1919. Per establishment.			1914. Per establishment.		
	Wage earners.	Capital invested.	Value added by manufacture.	Wage earners.	Capital invested.	Value added by manufacture.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

This comparison does not present the complete picture. In the case of the woolen, worsted, and cotton goods manufacture, the majority of the concerns and, in the particular case of the woolen manufacture, nearly all the concerns are integrated plants, containing a full complement of operations for working the raw material up to the finished product. In the carpet industry, on the other hand, the usual carpet mill is dependent upon other concerns for much of the

1 "Pitch," it will be recalled, refers to the number of wool-warp ends in a breadth of 27 inches; and "wires" to the number of wires (inserted to form loops) per inch of running goods.
2 See Appendix C, p. 120.

s, which it receive
ppears from the cens
linen yarns consume
lls. 92.2 per cen
and 37.6 per cen

then, are peculiarly devoted to the weaving and finishing processes. In the establishments from which the Tariff Commission secured figures, the proportion of operatives thus engaged, including the workers in the operations intermediate between spinning and weaving was 77.6 per cent. Again, it may be noted that the average number of such operatives per establishment was 465 as compared with the 323 given in Table 8 and covering all operatives in the mills.

The Tariff Commission also obtained original data upon the spinning of yarns by carpet mills for consumption in their own carpet production. Eleven mills reported the manufacture of woolen yarns for their own consumption and seven stated that their requirements for such yarns were covered or practically covered thereby. Eight mills indicated the manufacture of worsted yarns; seven of these produced all the yarns of this variety that they consumed. Only one mill reported the spinning of cotton yarns; and none the production of jute or linen yarns. The total number of spindles contained in the establishments from which the commission secured returns was: Woolen, 82,616; worsted, 82,224.

Incidentally, it may be noted that the advantages resulting from the possession of individual spinning facilities are not particularly great in carpet manufacture.

In the case of woolen spinning, the chief advantage is the possibility of supervising directly the mixing of the various materials (such as new wool, noils, and wastes, recovered wool fiber, and animal hair) which may be used in the manufacture of such yarns. But in the production of carpet yarns, the proportion of such substitute materials employed is much less than in the manufacture of woolen cloths. The census figures of 1914 were 15 per cent for the former industry and 70 per cent for the latter.[22] The reason for so wide a variation is to be found in the marked distinction between the use of such yarns for cloth and for carpet manufacture. There is no opportunity in the latter industry for the soft, weak yarn such as may be used in blanket manufacture; nor is the support supplied to such yarns in the operations of the carpet industry subsequent to spinning at all comparable with that provided in the fulling process of woolen cloth production. The gain to the carpet manufacturer arising through the direct supervision of his own mixture of materials lies principally in the blending of different kinds of new wools, judiciously selected from those available in the market at a relatively cheap price, so as to obtain a yarn of a given strength and appearance.[23]

[22] Cotton consumed has been included as a substitute material in the woolen goods figure, but not in that for carpets. In the former, union yarns (those composed of a mixture of wool and cotton fibers) are quite common, but are nearly unknown in the latter. In the worsted goods manufacture, on the other hand, the proportion of substitute materials used was less than 5 per cent in 1914.

[23] It may be noted that the limited statistics available indicate some slight trend toward woolen spinning in the carpet industry, and away from worsted and cotton spinning. A comparison is possible only with respect to the five-year period, 1909 to 1914. Corresponding data were not reported to the Census in 1919 nor prior to 1909. The percentages of woolen, worsted, and cotton yarns purchased by carpet mills as compared with their total consumption of such yarns are as follows:

	1909	1914	1919
Woolen yarns	40.9	37.8	38.2
Worsted yarns	44.5	47.5	42.6
Cotton yarns	89.6	92.2	92.6

The number of worsted combing machines in the carpet manufacture also shows a considerable decline over the period 1899 to 1919, from 134 to 85.

mportant features, not of a technical character, favorable to
ıming of yarns within the carpet mill are the saving of
diate profits, and the assurance of supplies at all times.
mer, however, in the view of some carpet manufacturers
egrated plants is of somewhat doubtful advantage. The
substantial when wool yarns are scarce and prices high; but
iod of depression the carpet mills must keep their spinning
ents in operation to avoid loss when, often, they could pur-
ns in the market at advantageous prices. It is questionable,
whether many manufacturers so situated really appreciate
cial gain or loss in more than a general way, since their
ıg methods are often inadequate to represent either clearly.
hole, the controlling reasons seem to be the independence of
lls in the matter of supplies as and when needed, and the
ntioned advantages of a technical character.

view of the position of the carpet industry in respect to
production is shown by the distribution of plants accord-
number of wage earners. Corresponding figures for other
ustries are presented for purposes of comparison:

istribution of establishments according to the number of wage earners, 1914.

	None.[1]	1-5	6-20	21-50	51-100	101-250	251-500	501-1,000	Over 1,000.
.....	3	11	25	27	44	81	62	20	25
.....	.....	2	16	18	15	25	7	6	8
.....	8	39	100	153	217	375	213	144	79
.....	17	54	58	78	120	141	28	4	1
oods.	47	295	360	291	257	232	92	35	13

ed have no paid employees.

oint in connection with the scale of operations is the
erence of size per establishment in the several sections
ry where carpet manufacture is carried on. The differ-
seen in the ensuing table:

rage size of carpet and rug establishments in the several States, in 1919 and 1914.

	Calendar year 1919.			Calendar year 1914.		
	Average number of wage earners.	Average capital.	Average value added by manufacture.	Average number of wage earners.	Average capital.	Average value added by manufacture.
.....	306	$1,589,286	$748,477	323	$877,874	$276,783
.....	159	913,868	415,576	152	450,460	137,049
.....	.....	.....	.....	218	611,706	215,012
.....	313	1,443,531	557,261	443	1,153,434	359,422
.....	907	4,449,245	2,527,888	893	2,260,797	735,526
.....	443	2,343,295	762,376	752	2,208,913	685,844

s in New Jersey, 1 in Connecticut, and 1 in Wisconsin, in 1919. Three establish-
nd 1 in Indiana, in 1914.

) GROWTH IN SIZE OF ESTABLISHMENTS.

the carpet industry has been steadily in the direction
ishments, together with a decrease in the total num-

ber of establishments. This is obvious from the census figures covering the period since 1869:

TABLE 11.—*Growth in the average size of establishments, 1869–1919.*

Year.	Number of establishments.	Average number of wage earners.	Average capital.	Average value added by manufacture
1869	215	56	$58,229	$20,0
1879	195	104	110,095	45,0
1899	173	166	220,960	110,0
1909	133	214	334,205	157,0
1909	139	240	544,079	227,0
1914	97	323	877,874	270,0
1919	73	306	1,589,286	740,0

The growth in average size of establishment thus pictured seems to be due almost wholly to an extension of the carpet-weaving and finishing facilities only, with no more than proportionate expansion in the spinning or other preparatory processes. It has not arisen from the addition of these latter functions without extension of the manufacturing capacity of the plants in terms of finished products. As far as may be ascertained there has been no material change in the extent of integration within the industry during the last 20 or 30 years.

Another point to be noted in the above statistics is the extraordinarily great increase in the average capital invested per establishment. Even before the war this had increased almost fifteenfold, whereas the increase in the number of wage earners had been less than sixfold and in the value added by manufacture approximately sevenfold. This increase in capital investment, which has been particularly rapid since 1899, is usually attributed to the necessity of scrapping of much of the old equipment and the purchase of more expensive new machines consequent upon the increased demand for wide, seamless rugs. Undoubtedly this has been a material factor, but a more important one is the radical transformation in the nature of the industry whereby the bulk of the manufacture has shifted from ingrains to the more expensive Axminster, Wilton, tapestry, and velvet. The plant and equipment for the production of these latter types are far more costly than for ingrain.

ADVANTAGES OF LARGE-SCALE OPERATION.

The advantages of large-scale operation in the carpet industry do not differ in some respects from advantages of the same sort in other manufacturing enterprises, but attention may be drawn only to those features of carpet manufacture which give large-scale production especially favorable opportunity.

In carpet manufacture as in many branches of the textile industry, the element of design is of peculiar importance. The effects to be secured from the various types and styles of rugs and carpets available for use are the product of the ingenuity and resources of the designing staff, great or small, which is employed. To make full use of the possibilities in this direction, the artistic department of the concern must be large, competent, and well paid, and the maintenance of such a force [illegible] which is out of the

oncern.[24] Again, the diversity of style required to please all of trade calls for a wide latitude in the variety of goods produced. ersity of production to satisfy differing demands is so great ly a large establishment can attempt it, and a small plant is pped by the lack of it. Finally, as to form and size of floor g, it may be noted that opportunities often occur for the on in both carpet and rug of a single motif, if the mill is d for the production of both forms. As regards rugs alone, it ary that a series of sizes from 10 feet 6 inches by 13 feet down t 2 feet 6 inches by 5 feet should be all of the same general To effect this, the design, usually plotted for a fabric 9 by 12, ed in its motif to the variant sizes, for obviously the intri- res which would be perfectly suitable for a large rug could not produced and if produced would be wasted on a small mat. uch as these of course are to the advantage of the large mill. manufacture is peculiar in the extent to which the mills ndent upon other manufactures for semimanufactured , particularly materials such as linen and jute yarns in market is wholly or largely unorganized. In consequence purchaser is bound to secure advantages through conces- rice, through prompt deliveries, or otherwise, all of which to economy of production. The saving in intermediate y contribute to the financial benefit of the large, integrated directly or through the assurance of adequate supplies in arcity.

in relations the nature of the processes in carpet manu- ors the large-scale producer. In the tapestry and velvet f the industry the peculiar method of imparting the design, ugh drum printing or cylinder printing, requires the pro- a considerable number of rugs upon a single design to be On account of the relatively large labor cost in drum e manufacture of a number of rugs at a single operation o the advantage of distributing preliminary costs over an ea. From the chenille Axminster manufacture, too, an be drawn, though from the British industry. Through mestic and foreign demand for their chenille rugs, one ish manufacturer of such goods is able to prepare in ad- quantities of chenille "fur" suitable for a selected line the various sizes. As the orders come in, the appro- is taken from the storeroom and only the "setting" g has to be carried through. Since the preparation of an important and expensive portion of the chenille especially for fabrics of advanced design, the pro- in bulk gives special advantage. American producers, f the limited demand for such goods in this country, able as yet to adopt such a method of large-scale

e, the particular method of sale in the carpet trade ge manufacturer. The usual practice is to maintain a g office in New York, and sometimes offices in other hicago, Boston, or San Francisco. This practice, in ills attempt to follow the big mills, is a considerable

time been stated in British circles that American manufacturers indulged exten- " of British designs. The charges have become less frequent of late years, and pre- if ever employed, has practically ceased. Small mills in this country have been ing designs developed by larger concerns.

expense to the former, although to the latter the expense is not a substantial factor since it is spread over a larger number of sales.

SECTION 5. MARKETING METHODS.

(A) ORGANIZATION OF THE TRADE.

One of the distinctive characteristics of the carpet trade is the degree to which the practice of direct selling prevails. Approximately one-half of the domestic mills maintain offices in the chief marketing center, New York City, and several also maintain offices in Chicago, Boston, or other large distributing points. This group includes many of the largest manufacturing concerns of the country. Other mills sell through special selling agents. While this latter group is much less extensive, it embraces several important manufacturing firms. In some cases this type of agency has partial or complete ownership of the mill.

A third group of mills, composed almost exclusively of the smaller concerns of the country, market their production direct from the mill, generally to wholesale houses with offices located in the chief distributing centers, such as New York City. Some of these firms, however, sell a large portion or the whole of their output to catalogue houses or department stores. It sometimes happens that such a house has control of the manufacturing establishment. For the most part the type of rug for which considerable sale still continues through such houses is the ingrain carpet and art squares, the product largely of small manufacturing plants.

From the selling offices of the various mills or from the selling agencies of others, the goods are distributed either directly to large department stores or through jobbers to retailers of lesser size. The direct purchase by department stores and large house-furnishing stores is a feature of the trade which has developed largely in the last 15 or 20 years. In consequence, the scope of the jobber has been appreciably lessened.

The method of sale in the carpet trade has for many years been that of seasonal openings. The large distributors hold openings twice a year, when they announce the prices for the succeeding season. Before the war such openings were held in May and November; and, though in recent years they have been moved forward to April and October, there seems to be a tendency to return to the old practice. The openings which take place in April or May pertain to the sales in the retail trade of the succeeding fall and winter, and those of October or November to the retail trading of the following spring.

The retail trade shows marked seasonal fluctuations. Changes of residence, movings of families from house to house, general housecleanings are a chief occasion of demand in the trade, since people are then most likely to purchase new carpetings, and these usually occur in the spring or fall, rather than in winter or summer. However, there is a certain amount of purchasing at all seasons for replacement, for the equipment of new houses, or for other reasons, and this prevents such severe seasonal fluctuations as occur in some other textile trades.

(B) TERMS OF PAYMENT.

tice had established certain arbitrary datings from ayments. Thus deliveries of goods sold in the f March 1 of the following year, and a discount of for payment within 10 days thereafter. For fab- ng datings were as of September 1, with a similar cently, however, this practice has changed. With manufacturers now date their bills as of 60 days tual shipment, and a 4 per cent discount is allowed within 10 days thereafter.

BOR CONDITIONS IN THE DOMESTIC INDUSTRY.

CHARACTER OF LABOR EMPLOYED.[25]

employees in the carpet and rug manufacture, nd age, is given in the following tabulation, which rison with other textile manufactures:

m of wage earners in carpet and rug industry, as compared with other textile industries, 1919 and 1914.

	1919			1914		
	16 years and over.		Under 16 years of age.	16 years and over.		Under 16 years of age.
	Male.	Female.		Male.	Female.	
	Per cent.	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*	*Per cent.*
.....	61.4	36.1	2.5	57.7	40.2	2.1
.....	66.2	32.3	1.5	66.4	31.9	1.7
.....	47.2	47.2	5.6	48.2	46.9	4.9
.....	27.8	66.8	5.4	27.8	66.2	6.0
.....	55.3	39.9	4.8	53.4	38.2	8.4
.....	38.0	56.7	5.3	38.5	54.3	7.2

of female labor in the carpet and rug industry is worsted, knit goods, or silk industries; it is roughly the cotton goods production, and is greater than oods industry. The figures upon which the pro- d as regards the carpet and rug manufacture cover cture in carpet mills; that is, they include employees y and spinning processes as well as in the weaving cesses.

ration of the employees into the several industrial as a result of inquiries made by the Tariff Com- paration for 32 concerns reporting is as follows:

ivision of carpet-mill employees into manufacturing groups.

Department.	16 years and over.		Under 16 years of age.	Total.
	Male.	Female.		
.....	2,258	1,971	73	4,302
.....	4,607	2,725	162	7,494
.....	3,665	1,439	23	5,127
.....	1,190	1,046	22	2,258
.....	11,720	7,181	280	19,181

12.

From this tabulation, and from the earlier enumeration contained in the census of 1910, it appears that while the proportions with respect to the whole body of employees do not greatly differ from the proportions given in the census figures, the divisions group by group vary considerably. Female labor is confined generally to a certain group of operations; in the preparatory processes pickers, worsted spinners, and doublers are largely women; in the intermediate processes drawers-in, winders, and setters; and in the finishing departments sewers and burlers. A substantial portion of those employed in the weaving department are likewise women. On the other hand, the ratio of men is particularly great in woolen spinning, creelers, dyers, and printers are largely men; so also are weavers, and in the finishing operations shearers, finishers, and packers. In all classes of indirect and general workers males predominate. That the proportion of women is not greater, especially in the finishing operations, is due to the weight and bulk of the completed goods.

In the weaving department, the ratio of men to women is subject to important variation among the several types of weaving, as shown in the following tabulation from typical mills:

TABLE 14.—*Division of weavers on the several types of carpeting.*

Type of carpet.	16 years and over.		Under 16 years of age.	Total.
	Male.	Female.		
Brussels and Wilton	1,045	194	5	1,244
Tapestry and velvet	1,017	59	.....	1,076
Axminster	611	384	17	1,012
Chenille Axminster	248	83	.....	331
Smyrna	66	.....	.....	66
Ingrain	39	13	.....	52
Other	5	10	.....	15
All types	3,031	943	22	3,996

The proportion of women in the Axminster and chenille Axminster weaving is particularly great, forming in the first almost half of the employees so engaged. In the Brussels and Wilton and in the tapestry and velvet weaving, on the other hand, their employment is limited. Many concerns have no women at all working on these types of looms, and the proportion given above, especially in the case of Wilton and Brussels weavers, is due to the particularly high proportion of women thus employed in two or three of the larger mills.

In the statistics obtained by the Tariff Commission as well as in the census returns, the proportion of children to total employees is lower than in any other textile industry with the exception of the woolen-goods manufacture. The employment of children is confined almost wholly to the preparatory, spinning, and intermediate processes, and in these usually only as helpers.

(B) HOURS AND WAGES.

The number of hours of work in the mills has been substantially reduced in the last few years. As late as 1914, the census reported that approximately 74 per cent of the operatives were working 54 hours per week, and 15 per cent additional 54 to 60 hours or more

, mills have generally adopted the 48-hour sched-
ing only 44 hours. A few mills, especially in
strict, are still working 50 hours, occasionally 54

ıe various stages of carpet manufacture, especially
'ation be included, are fixed upon different bases.
ıs, such as wool carding, time rates are employed;
en piece rates upon the number of pounds turned
ece rates on the number of spools; and in weaving,
ormity, piece rates on the number of yards pro-
practice differs from mill to mill. In consequence
d because of its relative importance, weaving only
ered.

for weaving vary with the several types of weav-
ingle type are fixed with reference to the number
the width of the machine, and the character of
essed in pitch, wires, rows of tufts, or otherwise.
lexity of process is the most potent cause of dis-
ıtes for different types. Within any one branch
e, tapestry, Axminster, or other, rates differ with
: the fabrics: but when rate of output is also taken
:ates are adjusted to yield roughly the same earn-
ɔeriod of time.

representative rates, for typical fabrics in represen-
sented below.

'eaving rates (per linear yard) paid in the carpet industry in the United States, July, 1920.

ription of the fabric.	Carpet.	Seamed rug.	Seamless rug.
	Cents.	*Cents.*	*Cents.*
h	11.30	13.82	.....
oom	24.71	.....	.....
	[1] 21.03	.....	.....
h	27.78	31.13	.....
	29.44	30.49	.....
	30.88	34.60	.....
itch	52.57	54.68	.....
	.....	.....	4.61
	.....	.....	4.95
	.....	.....	5.47
	6.30	.....	.....
	4.10	.....	.....
	9.30	.....	.....
	7.60	.....	.....
	.....	.....	6.39
	11.40	.....	.....
	9.50	.....	.....
	6.00	.....	.....
	.....	.....	6.56
	.....	.....	6.06
	.....	.....	7.15
	7.88	.....	.....
	8.70-9.90	.....	.....
	4.50	.....	.....
	3.50	.....	.....

TABLE 15.—*Typical weaving rates (per linear yard) paid in the carpet industry in the United States, July, 1920*—Continued.

Description of the fabric.	Carpet.	Seamed rug.	Seamless rug.
5½ by 7—			
1 loom	5.50	.....	11
2 looms	4.50	.....	.....
6½ by 7—			
1 loom	7.40	.....	11.7 [1] 11.1
2 looms	5.50	.....	.....
8½ by 7—			
1 loom	9.67	.....	.....
2 looms	7.85	.....	.....
Chenille Axminster:			
Linear yard, 27 inches wide	79.99-96.00	.....	.....
Linear yard, 9 feet wide	.....	.....	168.00-18[illegible]

[1] Crompton loom.

In general, the weaving of rugs is paid more highly than is the weaving of carpets of comparable grades. The rate for chenille Axminster is far in advance of that for any other kind of carpeting; Wilton and Brussels follow, in order; then tapestry and velvet, with very little difference, and Axminster with the lowest rate for the coarser structure, but with rates for the finest structure apparently exceeding those for the best grades of tapestry and velvet. The effect of 2-loom weaving is conspicuous for Axminster; less so for tapestry weaving.

A few firms reported ingrain rates, though not in a form to permit their inclusion in the table; they range from 8½ to 27½ cents per linear yard.

SECTION 7. DOMESTIC EXPORTATION.[28]

The exportation of carpets and rugs from the United States has never been an important feature of the domestic carpet trade. The highest point reached by the export movement was in 1896, when nearly 330,000 linear yards were sent out of the country; but as the total domestic production was about 76,000,000 square yards the exportation was of no great significance from a quantitative standpoint. There are, however, certain features of some interest in the trade, particularly its spasmodic character.

The figures of total exports show no extraordinary irregularity from 1880 to 1910; but to any one country the movement appears sporadic. Exports to the United Kingdom are typical. In the period 1880 to 1893 domestic shipments averaged approximately [illegible] running yards; but in 1894 they jumped to 265,000 yards, and in the five years 1894–1898, inclusive, averaged nearly 200,000 yards. Thereafter they fell rapidly. In the succeeding 5-year period they averaged less than 36,000 yards annually, and in the last 5-year period for which statistics are available to less than 11,000 yards. The sudden advance in 1894 was occasioned by the depression in American business conditions. The exports were largely confined to Axminster goods. During the war American producers were able to obtain some trade which had previously gone to the United Kingdom

[28] See appendix E, p. 39.

he Continent, but it was not large and was broken off in 1918, ecause of conditions since that time in the domestic industry, it t been since expanded. Data collected by the Tariff Commission hat few firms sent carpetings to foreign markets during 1919.

SECTION 8. IMPORTATIONS OF WOOL CARPETS.[27]

(A) SOURCES OF IMPORTATION.

r to the war.—The following table shows the average imports by ies during the period 1910–1914, inclusive:

TABLE 16.—*General imports of wool carpets and rugs—Average 1910–1914.*

Country.	Quantity.		Value.	
	Square yards.	Per cent of total.	Amount.	Per cent of total.
.....	428,562	41.1	$2,037,643	47.2
.....	305,149	29.3	1,218,255	28.2
East Indies.....	34,277	3.3	93,181	2.2
.....	35,529	3.4	121,007	2.8
.....	5,914	.6	27,339	.6
Kingdom.....	149,712	14.4	448,298	10.4
.....	19,512	1.9	71,656	1.7
.....	22,661	2.2	118,359	2.7
.....	40,739	3.8	183,962	4.2
tal.....	1,042,055	100.0	4,319,720	100.0

large import from oriental countries is clearly shown in this During the five years Turkey, Persia, the British East s, Russia, and China sent 77.7 per cent in quantity and 81 per in value. These imports are handmade fabrics. So likewise me from France and other countries. Altogether imports of nade products were approximately 84 per cent of the quantity 8 per cent of the value of the total imports. Most of the im- from the United Kingdom and Germany were machine-made, comprised approximately 16 per cent of the total quantity ted and 12 per cent of its value.[28]

ring the war and post-war periods.—The figures for 1915 and ing years show the dislocation of imports during the war l. There was no falling off during the first year of the war—scal year 1915—and the cause was undoubtedly the reduction

[27] Appendix G, p. 139.

[28] average value per square yard of the imports from the several countries during the period 1910–1914 llows:

.....	$4.75	Germany.....	$3.67
.....	3.99	France.....	5.22
East Indies.....	2.72	All other.....	4.52
.....	3.41		
.....	4.62	Average.....	4.15
Kingdom.....	2.99		

be noted that the square-yard value of the importations from the United Kingdom and Germany erally lower than that from the other countries, the exception being the British East Indies and The peculiar position of these latter countries is due to the fact that the handmade products rom India and the Mongolian part of Russia are distinctly the poorest types imported into the States. In consequence, their average value is lower or not much in excess of that of the machine- icles—these being, in fact, high-grade machine products—from England and Germany.

in duties effected by the tariff of 1913.[a] The reduction of imports in 1916 amounted to some 31 per cent, while in 1917 imports were only slightly less than in 1915. In 1918 they were only about 6 per cent of the average for the five years 1910–1914, and by 1919 they had become approximately 25 per cent. Shipments in both 1920 and 1921, however, exceeded in amount those in any year preceding the outbreak of the war, with the exception of 1910, and in value were the highest recorded—in 1920, 1,002,812 square yards, valued at $7,208,407; in 1921, 1,384,388 square yards, valued at $8,867,218. Changes have also occurred in the sources of imports. Imports from Turkey (the leading pre-war source) were in 1920 and 1921 less than half the pre-war average. Those from France (also a minor source) were higher in 1920, but in 1921 lower than before the war. On the other hand, imports from the United Kingdom increased in 1920 and 1921 to the high level of the period 1915–1917 and were roughly three times the pre-war average; those from Persia exceeded the pre-war average by a considerable margin; while in the case of China and British East Indies, particularly China, the increases in imports were very striking. China has now become a major source; in part this may be attributed to the lack of competition from the Near Eastern countries during and, to a less extent, since the war, and to the sudden popularity which has marked the trade in Chinese rugs during the last few years.

(B) THE TYPE OF RUGS IMPORTED.

Prior to the war.—The average of imports by types during the period 1910–1914 is given in the following table:

TABLE 17.—*Imports of wool carpets and rugs for consumption—Average, 1910–1914.*

Type.[1]	Quantity.		Value.	
	Square yards.	Per cent of total.	Amount.	Per cent of total.
Carpets woven whole for rooms	895,424	86.55	$4,069,162	94.52
Aubusson, Axminster, moquette, and chenille	27,385	2.65	66,069	1.53
Saxony, Wilton, etc.	18,949	1.83	38,369	.89
Tapestry Brussels	1,988	.19	1,598	.04
Velvet	31,364	3.03	62,158	1.44
Brussels	4,645	.45	5,994	.14
Treble ingrain	6,451	.62	6,539	.15
Double ingrain	207	.02	223	
Druggets and bockings	25,530	2.47	20,490	.48
Not specially provided for	22,408	2.17	34,547	.81
Total	1,034,620	100.00	4,305,149	100.00

[1] Felt carpets omitted from this and the following table.

The terms under which the various types of carpeting are entered in this table have been established by court interpretation of the

[a] For Schedule K these rates went into force on Jan. 1, 1914. The figures of imports for consumption indicate the immediate effect of the reduced duties. In the calendar year 1913, 828,029 yards, valued at $1,720,248, were brought in. For the following year imports were 66 per cent greater in amount, 39 per cent greater in value. This fluctuation in amount is larger than any preceding fluctuation shown by the fiscal-year figures since 1891. Relatively greater fluctuations in value have, however, occurred. Average imports for the following three years were approximately equal to those of 1913; 1918 and 1919 were years of extremely small imports, especially so during the fiscal year 1919, when only 267,006 square yards were brought in. The two following quarters show some recovery, and in the first quarter of 1920 imports were greater in amount than in any quarter following that ending Mar. 31, 1914, and over 55 per cent greater than that quarter in value.

ıe tariff acts.[30] *Carpets* are entered as Axminster, , etc., according to the various types. Machine- types, except Axminster and chenille Axminster, ı the roll goods of these several varieties, under the assifications. Machine-made Axminster and che- *rugs* fall within the classification "carpets woven ' given above. All handmade *rugs* enter under this n other words, the classification "carpets woven s" includes oriental fabrics, which form by far the f it, European (and other) handmade rugs, and a cer- European (machine-made) goods of the type men- cond classification, "Aubusson, Axminster, moquette, covers only *carpets* of these types. The other classifi- both carpets and rugs. There is thus no clear divi- e between handmade and machine-made products.

ar and post-war periods.—The following table presents or the seven years 1915–1921:

ports of wool carpets and rugs for consumption—average 1915–1921.

Type.[1]	Quantity.		Value.	
	Square yards.	Per cent of total.	Amount.	Per cent of total.
e for rooms	566,708	64.91	$3,411,695	81.00
er, moquette, and chenille	98,241	11.25	394,869	9.38
	81,242	9.31	235,751	5.60
	67,333	7.71	59,115	1.40
	21,005	2.41	58,245	1.38
	6,629	.76	10,129	.24
	821	.09	987	.02
	965	.11	1,911	.05
ings	9,172	1.05	8,791	.21
ided for	20,919	2.40	30,219	.72
	873,035	100.00	4,211,710	100.00

mitted.

ures indicate the result of lowered duties and war condi- e total yardage imported was about 85 per cent of that of ing period; the value about 98 per cent. More striking decrease is the change in the character of the goods. The as occurred in the machine-made products. Four standard ussels, Wilton, tapestry, and velvet, formed 20½ instead of ıt of the yardage brought in, and 8⅘ instead of 2½ per cent ue. There has been an absolute increase for all of these ept velvets, and for Aubusson and Axminster carpets the was accompanied by a decrease in rugs of the first class— iental—of somewhat less than two-fifths.

ges for this period, during which year to year fluctuations reme, do not adequately portray the facts. The decrease ts under the first classification took the form of an immediate 1915—during this and the following five years imports never l 650,000 square yards, the lowest figure since 1908—and a arked decline in 1918 and 1919, the latter year showing im-

definition of the terms "rug" and "carpet," as used in this report, see p. 29. Statements nly to statistical classification.

ports of less than 300,000 square yards. These were largely handmade goods of oriental origin. Coincident with an increase in total imports even beyond the pre-war average, oriental rugs have continued to predominate among the imports since 1919.

The four standard machine-made types, Brussels, Wilton, velvet, and tapestry, all show a strong upward movement in 1915, despite war conditions. The years 1916 and 1917 show importations well above the pre-war average, though less than the high point reached in 1915. The decreases during 1918 and 1919 are great, the low point apparently being reached in the latter year, when only 15,511 square yards were imported, as against a pre-war average of 57,147. In 1920, however, imports increased to almost twice, and in 1921 to more than three times the pre-war average.

Importations of Aubusson, Axminster, and chenille Axminster carpets show a somewhat similar movement, but although in 1910 with importations of 23,084 yards they were approximately equaled by velvet and Wilton; in 1921, with 185,360 square yards, they were over three times as great as the increased imports of Brussels, Wilton, tapestry, and velvet combined. This buoyancy is apparently due to the strength of chenille Axminster carpet.

Ingrains, and the miscellaneous carpets and rugs included, were imported to a less extent during this latter period than the preceding.

(c) RELATION TO DOMESTIC PRODUCTION.

The source and type of imported carpets indicate their relation to domestic production. The handmade product, of which the great bulk of the importations is composed, is not made in this country. Importations are in the nature of a luxury article and are directly competitive with the machine-made grades produced in this country only to the extent that articles of different character, put to the same use, may be so considered. The choice is a matter of taste or fashion rather than of durability or price.

Interest centers rather in the imports of the machine-made article, especially under the 1913 tariff act, which has been followed by increases in the imports of this type. In the following table a comparison is made between imports of the various types during the calendar year 1914 and the domestic production for that year. It must be kept in mind in interpreting these figures that the calendar year 1914 represents maximum importations, and that the comparison is of direct bearing on the competitive situation only in the case of the machine-made types, forming as they do only a small portion of the total imports.

19.—*Imports for consumption and domestic production of wool carpets and rugs, 1914.*

Type.[1]	Quantity.			Value.		
	Production.	Imports.[2]	Ratio of imports to production.	Production.	Imports.[2]	Ratio of imports to production.
	Sq. yds.	*Sq. yds.*	*Per cent.*			*Per cent*
woven whole for rooms....	.....	924,473	.....	.....	$3,801,061	.....
›-made.....	66,340,274	[3] 442,633	0.67	$64,683,322	[3] 614,678	0.95
ıusson, Axminster, mo-						
ıette, chenille.....	15,742,835	49,372	.31	18,578,693	102,071	.55
ɔny, Wilton, etc.....	5,616,263	112,840	2.01	11,929,605	221,077	1.85
estry Brussels.....	13,614,354	139,373	1.02	9,852,647	83,962	.85
ret.....	13,227,819	62,124	.47	12,867,635	128,735	1.00
ssels.....	2,698,840	21,711	.80	3,995,626	23,137	.58
›le ingrain.....	} 8,973,370	15,120	.17	3,406,381	16,301	.48
ble ingrain.....						
s and bockings.....	.....	26,656	.....	.....	18,648	.....
ıally provided for.....	6,466,793	15,437	.24	4,052,735	20,747	.51
›tal.....	66,340,274	1,367,106	2.06	64,683,322	4,415,739	6.83

[1] carpets omitted.
[2] ndar year.
[3] mall portion of machine-made included under "Carpets woven whole for rooms."

ports of machine-made carpeting during the year 1914 were 0.67 per cent of the domestic production in yardage and 0.95 ent in value. For Wilton carpets and rugs these percentages 2.01 and 1.85, respectively; for tapestry, 1.02 and 0.85. Other of carpeting show an even less proportion. If the handmade ting, largely oriental, be included with the machine-made, the imports represent an amount equal to only 2.06 per cent of the ıge produced in 1914, and 6.83 per cent of the value. The ɔpancy between these two figures is to be expected from the .cter of the trade in foreign rugs; many of those handled are es of high price, and are from the point of view of yardage a ı less important part of the trade than from the point of view of

e fact that Axminster and chenille Axminster fall under the first classifications, according as they are rugs or carpets, makes ssible an accurate statistical comparison between imports and ıction of these grades. In view of the growth of imports of lle Axminster, it is unfortunate that such a compa·ison is not drawn.

(D) ORGANIZATION OF IMPORT TRADE.

w York occupies a position of predominance in the trade in rted articles. Sales of imported fabrics are consummated in ent ways. One British firm maintains a selling agency in New ; another sells through a manufacturers' agent. Another British engaged in the sale of both British and oriental carpets and rugs recently made an arrangement to sell through an American r.[31] In general, however, the method of sale is through traveling s of European firms. During the winter 1919–20, however, many rs from the United States went to Europe. France is the exceɔ the above rule in not sending salesmen to the United States.

[31] British interest controls factories in the United States and Great Britain.

For oriental products the trade usually is through traveling agents of American importing firms. These agents visit the rug markets of Asia, buying rugs and carpets for their firms in New York for distribution in the United States. Many of these importing firms are conducted by men of eastern nationality, who are acquainted with business conditions and methods in oriental countries, and who often have extensive business connections there.

SECTION 9. DOMESTIC PRICES.

Figures for monthly prices of standard grades of Wilton, Axminster, tapestry, and Brussels carpets are presented in Appendix II, page 148, where both absolute and relative prices are given.

Between 1913 and 1920 prices increased enormously. By May, 1915, prices for all four grades had risen; by September, 1918, they were double the 1913 average; and by June, 1920, they had risen by over 200 per cent for all four kinds. Early in 1921, however, they began to decline. By the end of the year, they were only about double the 1913 prices, and they did not change materially until the latter part of 1922. The actual prices were as follows:

Kind of carpet.	Price per running yard.		
	June, 1914.	June, 1920.	June, 1922.
Brussels, 5-frame, 9-wire, 256-pitch Bigelow	$1.272	$4.320	$2.70
Wilton, 5-frame Bigelow	2.328	7.104	4.60
Tapestry, 8-wire, 200-pitch	.650	2.100	.....
Axminster, 6¾ by 7, 189-pitch	1.056	3.800	2.20

The increase in prices for June, 1922, above those quoted for June, 1914, were: Wilton, 98 per cent; Axminster, 108 per cent; Brussels, 115 per cent. The average increase for the three carpets was 105 per cent. The course of rug prices has been similar to that of carpet prices, showing a somewhat more rapid increase. That of four kinds of 9 by 12 Wilton rugs from 1915 to 1920, prices for which were available to the Tariff Commission, amounted to 207 per cent; that of three kinds of tapestry rugs of the same size from 1914 to 1920 amounted to 278 per cent; of four kinds of velvet rugs of the same size for these years to 257½ per cent; of four kinds of Axminster rugs of the same size, to 240 per cent.

The increase arose from war conditions, in the main from the effects of the war upon trade in raw materials, upon labor, and upon general demand. The carpet industry was regarded as a luxury trade by Great Britain and the United States, and Government control of shipments and raw materials was in accordance with this view. Partly on this account there was greatly decreased production during the war, which furnished a basis for price increases.

From the foregoing figures it will be seen that the Wilton bears the highest price per yard of any of the fabrics, Brussels, Axminsters, and tapestry following in order. The prices of velvet and of chenille Axminster carpets are not included; the first of these falls between that of tapestry and Axminster, and the second with or above that of the better grades of Wilton.

n of prices of the different forms of carpeting is pre-
Prices, which have been put on the square-yard basis,
n for two or more of these forms when they were known
arable grade and representative in nature.

per square yard of comparable[1] grades of carpets, seamed rugs, and seamless rugs.

[Cash wholesale price June, 1920..]

Description.	Roll goods.	Seamed rug (9 by 12).	Seamless rug (9 by 12).
ch, 9-wire	[2] $4.11	[2] $4.78	.....
ch, 9-wire	[2] 4.60	[2] 4.75	.....
ch, 8½-wire	[2] 6.08	5.85	.....
		[2] 6.84	.....
ch, 9-wire	6.53	8.16	.....
ns	9.79	10.72	[4] $13.77
		[4] 13.38	
tch, 13½-wire	[2] 7.80	[2] 10.83	.....
tch, 9-wire	.....	.....	13.20
itch, 13½-wire	.....	.....	10.48
wire, 2-shot	[2] 2.50	.....	[2] 2.76
ire	2.69	.....	2.80
vire, 2-shot	[2] 3.13	.....	[2] 3.76
vire, 2-shot	3.62	.....	4.03
vire, 2-shot	6.34	.....	4.97
ions	.....	[5] 3.23	[5] 3.69
.....	[2] 3.93	.....	[2] 4.72
.....	4.87	.....	4.32
ster: 6-row	10.99	.....	11.78

ods manufactured by the same establishments, under the same trade name, or which the
nas itself stated are comparable.
ces.

rable as under note (1). Judged so because of identity in price for 27 by 54 rug.

eral, the price per square yard is higher for seamed and seam-
than for roll goods. The table presents, however, two ex-
One seamless velvet rug is sold at a lower price than the
nding carpet; so, also, is one seamless Axminster rug. In
e these are products made extensively by large manufacturers.
ercentage by which the price per yard of a rug exceeds that
pet varies somewhat for the different kinds. In the table
he seamed Brussels rug exceeds the roll goods in price per
ard by over 16 per cent; the wool Wilton seamed rugs exceed
goods by from 8 to 25 per cent; the worsted Wilton by about
cent. The tapestry, velvet, and Axminster seamless rugs
exceed their respective grades of roll goods by from 4 per cent
er cent, with the exception of the two cases mentioned above.
n the seamless chenille rug and roll goods the difference is
ight because of the close similarity in methods of manufacture,
chenille roll goods quoted are made in 9-foot breadths, just
he rug upon which these square-yard prices are based.

Chapter III.

FOREIGN MANUFACTURE.

Section 1. Handmade Rugs.

(a) countries.

The foreign manufacture of handmade rugs is carried on in two regions which are distinct in the nature of their product, Europe and the Orient. The European industry is a small survival of the old hand manufacture which was superseded by power-driven machine industry. The product is largely a luxury article, almost entirely made to order, salable by reason of fine quality and the fact that such rugs can be designed to meet any requirement as to size and shape. Great Britain, France, Germany, and Austria all maintain a certain amount of hand production. Among the products the Aubusson and Savonnerie carpets of France and the Axminster of England have a reputation for high quality. The European rug is woven on the simple hand loom, and in this differs from the oriental; in basic structure it is the same, and it finds much the same market. In comparison with the consumption of oriental carpeting in the United States that of the European handmade product is small.

Asia Minor and Central Asia are the most important areas of oriental manufacture. The distribution is indicated by the fact that oriental carpets are commonly classed as Turkish, Persian, Caucasian, Turkestan, Indian, or Chinese. China and India rugs have not been looked upon as favorably as the other varieties. The best known Turkish rugs are those made in Anatolia and nearby; at Ghiordes, Demirdji, Oushak, Bergama, Ladik, and Smyrna. Persian rugs come from Tabriz, Kermanshah, Saraband, Kirman, Shiraz, and Hamadan. Caucasian rugs are woven in the Provinces of Daghastan, Kabistan, Karabagh, and Shirvan. The Turkestan rugs are the product of nomadic people of Central Asia, about Bokara and in Afganistan and Beluchistan. Indian rugs are largely from Amritsar and Agra, and Chinese from Tientsin and Pekin. The early Chinese industry was located in Kansu, Shansi, and Shensi, Provinces which border Mongolia. The industry at Pekin and Tientsin is of comparatively recent origin.

Formerly it was possible to determine the source of oriental rugs from the designs which were traditional in these different localities. For instance, the Turkish rugs were woven in geometric patterns with gaudy and inharmonious colors, while the Persian rugs were of fine patterns, largely floral, in rich, subdued, and harmonious colors. The Caucasian rugs were even more crude in design than the Turkish. The influence of the extended trade in oriental rugs in the Occident, however, has resulted in changes in design to meet European demands or at least what the dealers in the regions consider these demands to be. The result has been to make it practically impossible any longer to determine the origin of the rugs from their design.

(B) METHOD OF PRODUCTION.

—Wool is more widely used for warp and filling in
n in European. A wool warp is typical of Turkish,
urkestan rugs. Other yarns used are the same as in
ustry in Europe and the United States; in fact,
l jute yarns are usually imported from these regions.
lly employed as warp, the ends appearing, after a
a fringe.
l ordinarily comes from the district in which the rug
l for the best rugs comes from sheep which are housed
any cases, are covered with linen coverings. These
the wool clean and cause it to become so saturated
; that it is kept soft and glossy.
e, or were, largely vegetable. Colors frequently used
rcelain, blue, orange, crimson, rose, red, and green.
rom occidental countries and the perfection of aniline
yes has resulted in their being used to a certain extent
. The success of such use seems to depend upon the
dyes used and the skill and care with which they are

Throughout the Orient weaving is done principally by
and boys. Customarily these work as a family under the
the oldest or most experienced member, sometimes in
ted by the weaver.
e war.—In the East the European war has profoundly
stry. Wages of carpet weavers have risen from three to
ne pre-war rates in Syria, Circassia, and Persia. A dimi-
e number of workers is reported, and the dislocation and
f trade since the close of the war have retarded a return
ar basis of production.

) ORGANIZATION OF MANUFACTURE AND MARKETING.

nization of the rug trade in the East before the advent of
rol from western firms varied somewhat with localities, but
ing description may be taken as typical, and would, of
ply to a large number of places to-day which still remain
direct occidental influence. The making of a rug is con-
the leading merchant of the town. He provides the
with wool, pays the dyer and the weaver, keeps an eye on
ess of the work, and appropriates the rug when it is finished
y for sale at the next fair. This head merchant, besides
e wages per "pick," often has in addition the control of the
e and thus more or less complete control of the weaver's life.
es the rugs are sold in the shop of the head weaver to traveling
ts, and they thus find their way to Constantinople or other
nt markets. Such merchants collect a number of rugs, put
to bales, and sell them in this form rather than singly.
e the rug and carpet production in the Orient has fallen under
tern influence this rather crude distributive system has been
l to some extent in order to improve production and facilitate
chase of rugs by western merchants.
xample of this is the manufacture of rugs in the region around
a. Here a firm with a capitalization of $2,000,000 was formed

by a combination of five smaller concerns previously operating in this district. This concern has set up a spinning plant near Constantinople and a dyeing plant near Smyrna. The yarn is spun at their plant, taken to Smyrna and dyed, and sold to weavers, usually on credit. The designs of the rugs desired by the company are supplied the weavers and woolen yarns so dyed as to fulfill the requirements of the design. Cotton yarns the weavers purchase from other dealers. When the rug is completed the company will buy the rug, although the weaver is not bound to sell to it. In fact, buyers compete in the purchase of rugs. Occasionally the representative of a whole village, acting as tribal chieftain, will contract on behalf of his community to deliver a certain quantity of rugs in a year, the company to supply the yarn. In this case the sum is stipulated and the company takes the rugs as woven. Rug designs are made up for the most part in the Smyrna office. Some orders are placed with the Smyrna company by importing houses which have drawn up their own designs. The taking of special orders for rugs of particular designs and sizes is unusual.

At Tabriz a German firm had prior to the war erected a factory, in which was located machinery for dyeing and spinning yarn. Some European labor was used. At present the factory has been taken over by a British firm, reported to be in the control of an eastern merchant. Sample rugs are made here, and these, with the yarns appropriately dyed, are taken to the weavers in near-by villages, who weave the rugs under close supervision. It is reported that 1,000 European workers are to be used at the Tabriz factory.[1]

In India the industry is organized on the factory basis at Amritsar and Agra, the important centers. The yarn is locally dyed and spun. The weavers are largely boys, from 10 to 20 years old, working under a master weaver. The making of rugs is also carried on in the jails.[2] The factories employed 2,900 wage earners in 1917.[3]

The demand for Chinese rugs has been relatively recent and has resulted in large numbers of rug buyers going to China. The weavers there works under contract or orders from foreign countries. The factory system is very similar to that in India.

(b) THE EFFECT OF OCCIDENTAL INFLUENCE.

The ordinary criterion of the quality of an oriental rug is the number of knots per square inch. Other elements are of much importance, however.

The portion of the oriental product produced directly under western control, even in its most attenuated form, is probably small, and this fact must be kept in mind in judging the effect of such control. Certain advantages in marketing the product, such as its production at a stated time and control of design with the object of getting a product marketable in the West, are involved in, and to some extent form a reason for, the introduction of this organization. The control of design has, where effective, eliminated the insertion in the regular pattern of some extraneous motif to suit the personal idiosyncrasies of the weaver, which often was a real detriment to the rug. A more

[1] [illegible]

[2] [illegible]

[3] [illegible]

been the breaking down in many regions of the
lization of design, which has made it impossible for
igs of more than one pattern in a given locality.
western influence has been the popularity of western
the cruder sort—in the East. It has been reported
Chinese weavers have copied the patterns of American
paper in the weaving of their product.
of the rugs produced under western control is upon
in use generally in the Orient, but some improvement
y of the weaving has been made through the intro-
ar pieces of wood to hold the warp threads and the
cess of weaving. Western influence has, on the whole,
vorkmanship, at least in the matter of the elimination

yestuffs, upon which the influence of the west is most
fference of opinion.

SECTION 2. MACHINE-MADE CARPETING.

(A) UNITED KINGDOM.

oducts, size.—Carpet manufacture in Great Britain is
alized in three sections. Of these, the Kidderminster
h the industry has been longest established, is the most
ts products are chiefly carpets of finer qualities—Ax-
ton, and Brussels. The second area lies in the West
orkshire, with Halifax as its center. The product of this
ely diversified, running from luxurious Wiltons to cheap
The third section is in Scotland, with its center at Glasgow.
of the Scotch mills is less diversified than that of York-
t includes carpets of both the better and the cheaper
he one hand, chenille Axminsters,[4] many of them of excel-
; on the other, tapestries and cheaper types. It includes
vely small quantities of Wiltons and Brussels. Just as the
ossley & Sons dominates the Yorkshire area, so that of
npleton & Sons dominates the Scotch. Ingrain, which, in
f wool carpeting, at least, has so largely disappeared from
on in the United States, has been extensively produced in
Once called Kidderminster because produced in that area,
is now more commonly denominated Scotch, the production
een largely removed from the Midland region.
ritish industry is considerably smaller than that of the
tates. In the census of 1907 the total production of carpets
ted at $20,011,000, while an estimate for 1913 placed it at
000.[5] The estimate for 1913 is less than one-third of the
n figures for 1914.
parison of the number of carpet looms in the United Kingdom
United States indicates a slightly less predominance for the

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duction of chenille Axminster in England is on a widely different footing from that in this
n addition to fine quality chenille carpets, as produced in the United States, cheap grades are
could come into competition with the less complicated carpet fabrics. Designs for such articles
elaborate and brightly colored, in contrast to the relatively more extended production, for the
es in the United States, of single colors in subdued tones. Methods of manufacture are similar
countries.
on the Textile Trades After the War, p. 72.

y a combination of five smaller concerns pre
istrict. This concern has set up a spinning
nd a dyeing plant near Smyrna. The yar
aken to Smyrna and dyed, and sold to we
he designs of the rugs desired by the co
eavers and woolen yarns so dyed as to fulfi
esign. Cotton yarns the weavers purch
When the rug is completed the company
he weaver is not bound to sell to it. In fa
urchase of rugs. Occasionally the represe
cting as tribal chieftain, will contract on
eliver a certain quantity of rugs in a year,
arn. In this case the sum is stipulated
ugs as woven. Rug designs are made u
myrna office. Some orders are placed
y importing houses which have drawn
aking of special orders for rugs of par
nusual.

At Tabriz a German firm had prior to
hich was located machinery for dyeing
uropean labor was used. At present
ver by a British firm, reported to be
erchant. Sample rugs are made here
ppropriately dyed, are taken to the wea
eave the rugs under close supervision
uropean workers are to be used at the
In India the industry is organized on
nd Agra, the important centers. The
he weavers are largely boys, from 10
master weaver. The making of rugs
he factories employed 2,900 wage ear
The demand for Chinese rugs has
esulted in large numbers of rug buye
here works under contract or order
ctory system is very similar to that

(D) THE EFFECT OF occ

The ordinary criterion of the quali
knots per square inch. Other el
owever.

The portion of the oriental produ
ntrol, even in its most attenuate
ct must be kept in mind in j
rtain advantages in marketing
a stated time and control of
oduct marketable in the West
m a reason for, the introducti
design has, where effective, el
ttern of some extraneous mot
the weaver, which often was

The Journal of Commerce, Sept. 8, 1920.
Products so made are not admitted to the
Department of Statistics, India, Large Ind

nong the manufacturers has
i this direction. Associations
ent lines "for the control of
." [7] The Brussels and Wilton
in existence for some time; it
Association; there are also a
association among the makers of
turers' Federation, covering the
ltons, not under the influence of
One firm may belong to more than
ng as it produces more than one

se the large majority of the makers of the
they have controlled the prices and terms
very effective manner, though subject always
of the manufacturers remaining outside the
greater number have habitually followed the
is set up by the associations.[8]

, has likewise included the standardiza-
of the various fabrics.
eral lines, especially for the purpose of
has come since the outbreak of the war.
f the Whitley Councils, was put forward
formation of the British Carpet Manu-
the trade, with three district associations
acturing areas. These district associations
oint Industrial Council was organized for
l with wage adjustments.
the United Kingdom in carpets and rugs
i that of the United States, characteristic of
ner in general trade. The much larger pro-
nds its outlet, except for a quantity of very
the domestic trade. Imports, though large in
portant relative to total production, while
made rugs is a negligible factor. For Great
ralizations may be reversed without involving

one-third of the British product is manufactured
orts of carpets and rugs in 1913 amounted to
yards, valued at $7,500,000.[9] The influence of the
luce a very marked decrease in exports; in 1919 the
proximately 45 per cent of the above figure, valued,
er half as much again as in the former year. In 1920,
exported increased to over 80 per cent of the 1913 figure,
une in 1921 to 56 per cent. Both before and since the
sh Dominions, particularly Australia, have been the lead-
, taking over half the exports; but the United States has
me a market of some importance, her share of the British
ing, in 1920, four times and, in 1921, three times as great
3.

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op. cit. 1919, p. 107.
108.
re with the high United States figure, 265,000 running yards in 1894.

Imports into the United Kingdom have been smaller in amount, but have shown much the same course. In 1913, they amounted to somewhat less than 2,000,000 square yards, of which slightly less than 30 per cent were reexported. This 30 per cent, however, consisted largely of the more valuable rugs, so that it represented over 60 per cent of the total value of the imported articles. Imports during 1919 were slightly over 600,000 square yards, 45 per cent of which were reexported. In 1920, however, the yardage imported increased to practically the same figure as in 1913, about 35 per cent of the imports being reexported; in 1921, the yardage imported declined to about 88 per cent of the 1913 figure, about 23 per cent being reexported.

Imports are largely oriental. Machine-made foreign goods which find a market in the United Kingdom are principally from France, and, before the war, Germany and Austria. The French products are largely Wiltons, which are of good quality and wear well. The German and Austrian goods are in large part chenille Axminster of the extremely cheap grade not manufactured in the United States.

Great Britain, whose machine carpet industry is second only to that of the United States, thus occupies a commanding position in the world's carpet trade; she is not only, as is the United States, an important manufacturer of these products, but also handles a large share of the world's traffic in them, both as exporter of her own manufactures and as importer and exporter of foreign-made goods—her position in the latter trade being due largely to her acting as an entrepôt of eastern rugs.

Labor—Number of employees.—The last British census presenting statistics of wage earners—that of 1911—gives the following figures for persons employed in the carpet and felt industry. The inclusion of the manufacture of the last-named article of course results in numbers in excess of those actually employed in the carpet industry.

Number of wage earners employed in the carpet and felt industry in the United Kingdom.

[Census, 1911.]

	Persons.	Male.	Female.
England (total)	15,302	6,982	8,320
Worcestershire	6,339	2,757	3,582
Yorkshire	5,371	2,237	3,134
Lancashire	1,413	992	421
Scotland	5,987	2,081	3,906
Ireland	280	58	222
Total	21,569	9,121	12,448

The total number of persons employed in the carpet and felt industry in the British Isles was thus 21,500, only 6,000 of whom work outside of England. Over 57 per cent of these workers were women. This figure is higher than the percentages recorded in any previous British census. The employment of women increased continuously from 1861, when only 18.3 of all wage earners were women, until it reached the high figure of 1911. This increase has been attributed to the severe competition which began somewhat after

irst importations of American Axminster carpets
n resulted in the employment of women at the

—Prior to the war standardization of wage rates
general, nor has it become widespread since, either
chief manufacturing areas or between them.
rates, however, had been established for Brussels
ics in each of the three districts, and after 1911
ere in force for tapestry manufacture in Scotland.
wage rates presented will be confined to weav-
ent British wage rates are stated in two parts:
ge (usually that in force in July, 1914); and (2) a
that base, called a bonus or cost of living wage.
wage paid at any time the base rate times the bonus
base rate.
of the carpet industry the percentage contains (1)
mpensate for increased cost of living since the out-
war; (2) increases (15 per cent for pieceworkers) to
reduction of hours to 48; and (3) increases in basic
egarded as permanent. In the statement of present
increases are not added to the basic rate to which
forming the cost of living wage is applied, but are
of this percentage which will not be removed with
a cost of living.
the rates in force in July, 1920, these basic rates are
the bonus in effect at that date.
onus was of 10 per cent, granted on July 8, 1916, to
le in the Kidderminster district. On October 19, 1918,
ad reached 75 per cent for piece and time workers in
. On March 10, 1919, an increase of 15 per cent was
workers, to compensate for the establishment of the
K, in place of the 55 or 55½ hour week previously worked
and the 49 to 56 hour week in force in Scotland. Time
t the same date arranged to give the same weekly earn-
re. On July 1, 1919, a 15 per cent increase was granted
kers and a 20 per cent increase to time workers, these
be considered a permanent addition to the base rate
o carry the bonus." [11] In other words, the bonus for
rs at this date was 105 per cent over the base, this per-
luding 75 per cent to compensate for the increased cost
15 per cent to compensate for decreased hours, and 15 per
regarded as a permanent advance in wages. The bonus to
ers was 95 per cent. On August 12, 1919, four-sevenths of
ates then in force was declared to be the base rate.
h, 1920, standardization of the bonuses for the entire in-
as arrived at through the Industrial Council. The agree-
ch it drew up was to remain in force from January 1 to
r 1 unchanged, except for increases or decreases in the
volved in the agreement itself. It provided for (1) a 15 per
ease over base for both time and piece workers, which made
l bonus 110 per cent for time workers and 120 per cent for

itish wage scale, see Appendix E, p. 132.
ase means that increases would be based on the 1914 wages as before, and that this 15 or 20
ld simply be added in as a part of the bonus.

pieceworkers; (2) a change in the bonus according to the co
living figures published in the Labour Gazette, in accordance
the following scale:

Cost of living.	Time workers.	Piece-workers.
Per cent.	*Per cent.*	*Per cent.*
165	150	160
155	140	150
145	130	140
135	120	130
125	110	120
115	100	110
105	90	100
95	80	90
85	70	80
75	60	70

Advances in the cost of living since the adoption of the scale bro
the bonus, in July, 1920, to 130 per cent for time workers and
per cent for pieceworkers.[12] Calculations of weaving rates
been made on this basis and are presented, with those American
which are most nearly comparable in the following table:

TABLE 1.—*Typical weaving rates paid in the carpet industry in the United Kingdo
the United States, July, 1920.*

[Rate paid per linear yard.]

Description of the fabric woven.	Carpet.				Rug.		
	United Kingdom.			United States.	United Kingdom.		
	Basic.		Basic, plus bonus.[a]		Basic.		Basic, plus bonus.[a]
Brussels (rugs, seamed):	*Pence.*	*Cents.*	*Cents.*	*Cents.*	*Pence.*	*Cents.*	*Cents.*
5-frame, 9-wire[b]	2⅜	4.82	11.56	.....	3½	6.84	16.42
5-frame, 9-wire	2½	5.07	12.17	.....	.....	.....	.....
5-frame, 9-wire, 256-pitch	.....	.....	.....	11.30	.....	.....	.....
Hair carpets, 7-wire, 4/4 loom	4¼	8.62	20.68	{ 21.03 / 24.71 }	.....	.....	.....
Wilton (rugs, seamed):							
5-frame, 9-wire	3⅛	6.34	15.00	.....	4¼	8.36	20.01
5-frame, 9-wire, 256-pitch	.....	.....	.....	{ 27.78 / 29.44 }	.....	.....	.....
5-frame, 10-wire	3½	7.10	17.04	.....	4½	9.12	21.89
5-frame, 10-wire and below	3⅞	7.86	18.86	.....	.....	.....	.....
2-5-frame, 10-wire, 256-pitch	.....	.....	.....	30.88	.....	.....	.....
5-frame, 10½-wire	3⅛	7.48	17.95	.....	4¾	9.50	22.80
5-frame, 10-wire, 256-pitch	.....	.....	.....	{ 26.12 / 41.02 }	.....	.....	.....
5-frame, 13½-wire	4⅛	9.76	23.42	.....	5½	11.79	28.30
5-frame, 13½-wire, 256-pitch	.....	.....	.....	52.57	.....	.....	.....
Tapestry:							
6-wire, seamed rug	.....	.....	.....	.....	.91	1.84	4.41
6-wire, 162-pitch, seamless	.....	.....	.....	.....	.....	.....	.....
6½-wire	.....	.....	.....	.....	.....	.....	.....
7-wire	1.09	2.21	5.30	.....	.....	.....	.....
7-wire, on one loom	.....	.....	.....	6.30	.....	.....	.....
7-wire, on two looms	.....	.....	.....	4.10	.....	.....	.....
7-wire, seamed rug	.....	.....	.....	.....	1.05	2.13	5.12
7-wire, seamless rug	.....	.....	.....	.....	.93	1.88	4.51
7-wire, 180-pitch, seamless	.....	.....	.....	.....	.....	.....	.....
8-wire	.....	.....	.....	.....	.....	.....	.....
8-wire, on one loom	1.24	2.51	6.03	9.30	.....	.....	.....

[a] 140 per cent of the basic rate.
[b] Double shed loom.

[12] On the first pay day in September, 1920, 150 per cent for pieceworkers and 140 per cent fo
workers.

aving rates paid in the carpet industry in the United Kingdom d the United States, July, 1920—Continued.

woven.	Carpet.				Rug.			
	United Kingdom.			United States.	United Kingdom.			United States.
	Basic.		Basic, plus bonus.		Basic.		Basic, plus bonus.	
	Pence.	*Cents.*	*Cents.*	*Cents.*	*Pence.*	*Cents.*	*Cents.*	*Cents.*
				7.60				
					1.20	2.44	5.85	
					1.05	2.14	5.13	
lless								5.44
mless								6.39
								9.56
	1.40	2.84	6.81					
				11.40				
s				9.50				
	1.56	3.16	7.59					
g								7.65
				6.00				
amless								c 6.56
eamless								c 6.06
								7.15
	2.14	4.34	10.41					
	1.65	3.35	8.03					
	1.82	3.69	8.86					
				{ 8.70 / 9.80 }				
, rug, seamed				4.50				4.50
s				3.50				
, rug, seamless				5.50				5.75
ns				4.50				
, rug, seamed				7.40				11.87
ns				5.50				d 13.24
				9.67				
ns				7.85				
	e 2½	4.56	10.95					
:	*Linear yard, 27 inches wide.*				*Linear yard, 9 feet wide.*			
ations				{ 79.99 / 96.00 }				168.00 / 319.00
ns						{ f 29 / f 43 }	g 69.60 / h 103.30	

i.

ton & Co. give this rate with the following statement: "We understand that when the urers made inquiries as to wages, they found that most of the manufacturers were pay- for the most usual quality which has 7 picks or shots to the inch. * * * This might base rate, as the manufacturers concerned are paying on this a percentage based on the of living figures."

, submitted by McCleary, Wallin & Crouse, to Committee on Ways and Means, Feb. 19, rings, 1913, p. 4508.

s here presented for the two countries are strikingly alike, the case of Wiltons, for which the British wages given are the American. In the case of Brussels, the British wages except for hair carpets, higher than the American. For weaving the rates stated for Great Britain are somewhat pt in one case of two-loom weaving; they are generally t over two-thirds of the American rates. Comparison can ly be made for velvet; the American wages seem the larger. British wage rate quoted for Axminster carpet was supplied s Templeton & Sons Co., and stated to be fairly general in e. Only two of the American rates quoted exceed this, h of these are for rug, not carpet, weaving. For chenille er the source of the British figure quoted differs from that est of the table, and the amount of the discrepancy between

the British and American wage can not well be compared with t for the other kinds of carpets.

The weaver and his assistant perform tasks other than the m operation of the loom. The payment for these tasks, as well the character of the tasks usually performed, differs between the countries and even among the different companies, according to ferences in mill practice. Wages for the subsidiary operations are easily compared than weaving rates. The wage paid for time-w in the weaving room may be used as typical of such wages; rates were 7 and 7½d. per hour, which, with a bonus of 130 per cent, w amount to 32.6 and 35 cents, respectively. Three American f reporting to the commission each pay 93½ cents per hour. A c parison between the wages of loom fixers (called "tuners" in G Britain) in the two countries yields a similar result. The base for a tapestry loom fixer in a large British firm has been stated t 50s. per week—with the above bonus, $27.98 per week. The m mum wage for fixers in one American factory is $58.43 per week.

Change in relative position between the two industries during since the war can be judged from the increases which have taken p in rates in the United States and in Great Britain. For piecewor in the latter they amounted to 140 per cent in July, 1920. Incre have not, of course, been standardized to the same extent for American mills that they have for the British. Of 31 American fac ies reporting to the Tariff Commission not one showed an incre either for weaving or other subsidiary operations, of less than 40 cent. Four reported an increase of less than 80 per cent for weav 9 an increase of from 80 to 119 per cent; 6 from 120 to 159; 77 from to 199; and 3 of 200 per cent or more. For operations other than w ing data are available from only 25 firms; a higher percentage of t report increases of from 120 to 199 per cent than is the case weavers—an indication of a greater increase in these relatively skilled operations. For both classes of labor the increases thus erally run from 100 to 200 per cent. Those above the latter figure only slightly in excess of it.

A further comparison of American and English wages may derived from the following statement submitted to the commis by an American manufacturer; the figures quoted are wage paym in a representative American mill and in a representative Eng mill for various operations in weaving tapestry rugs.[13]

TABLE 2.—*Comparative wage rates of a representative American and a represen English mill, July 1, 1920.*

	American (dollars).	English (pence).	English (dollars).[a]	Per Ame wages Engl
Printing:				
Unit "A," 8/864—				
Per drum	0.9780	21.6	0.4380	
Per pound	.1567	3.68	.0746	
Unit "B," 22/648—				
Per drum	.8269	16.99	.3445	
Per pound	.1409	3.78	.0766	
Unit "C," 6/648—				
Per drum	.7015	16.99	.3445	
Per pound	.1465	3.89	.0788	

[a] £1=$4.8665.

[13] The English figures have been converted into dollars at $4.8665 to the pound, instead of $1, as they calculated on the manufacturer's statement.

wage rates of a representative American and a representative English mill, July 1, 1920—Continued.

	American (dollars).	English (pence.)	English (dollars).	Per cent American wages over English.
.....	12.65	441.6	8.9542	41
.....	.0419	1.41	.0286	47
.....	13.97	578.4	11.7280	19
.....	.039	1.85	.0375	4
er rug.....	1.023	43.8	.8881	15
er rug.....	.8745	38.4	.7786	12
ıer rug.....	1.265	54	1.0949	16
ır rug.....	1.078	45	.9125	18
n, per 100 pounds.....	.534	13.05	.2640	102
100 pounds.....	1.10	28.8	.5840	88
.....	3.30	96	1.9466	70
.....	3.13	86.4	1.7519	79

of American wages appears most plainly in operweaving, especially drum printing. It is to be ıerican factory works a slightly longer week.
luct of the two operations—printing and weaving—

	Amer-ican mill (50 hours).	English mill (48 hours).		Amer-ican mill (50 hours).	English mill (48 hours).
	Drums.	*Drums.*	Weaving:	*Rugs.*	*Rugs.*
...	55	36	Unit "F".....	48	34
....	61	42	Unit "G".....	50	40
....	44	28	Unit "Y".....	62	47

ican mill in these two operations produces from 25 ıre units per week, and from 20 to 51 per cent more 50-hour basis. This greater speed in production ırse, some saving in overhead, but it is not to be ercentage offset to the wage rates given, since they ɔce, and are, therefore, not influenced, in so far as greater speed of production. It means, however, : earnings for the American workman: Average as a matter of fact, were 131 per cent greater in lant, a percentage higher than that between the above.

—Hours in the British industry have been standard-ɔek, a reduction from 55 or even more working hours r. This reduction corresponds to the change that in the United States, where 48 hours is now the ɔd week, in contrast to 1914, when 74 per cent of the rked a 54-hour week, and 15 per cent one of greater

:tion of output.—In the hearings held before the ɔmmission in 1905 a witness who was familiar with

the industry in both countries, alleged that the British laborers li
output. He stated that the British manufacturers were hamp
by this limitation in their competition with American. He sai

> I never heard of a trades-union in our business [in America] limiting the p
> of a man like they do over here, to the detriment of British trades. In Americ
> fix a rate, and then a man is free to earn as much as he can. In our America
> they will point with pride to a man who is the biggest wage earner. In this c
> if a man gets even an average, he wants to sneak away with it. (British Tarif
> mission, 1905, Vol. II, pt. 5: Carpet Industry, par. 2937–8.)

The charge is not made that there is a definite rule restricting
put, but that a consensus of opinion as to the amount a man sh
turn out results in a less product than that of which the worke
capable.

Prices.—Comparison of British with American prices perhaps
clearly indicates the relative competitive position of the two i
tries than the wage rates, which have been discussed above. B
prices are available from price lists published by one British m
facturer, samples and prices furnished the Tariff Commission
second, and statements of American importers. Figures sel
from these sources have been presented in the table below, tog
with prices of American articles which were judged to be most n
comparable. Differences between foreign and domestic fabrics
the comparisons less accurate than the comparison previously
between the different forms of American carpeting. A basis for
paring grades has been furnished by analysis of samples of imp
carpet and the statements of American importers.

British prices occupy the first two columns of the table; the
is the British price plus the United States duty, with an addit
6 per cent to cover importers' charges in this country;[14] the f
column contains American prices as nearly comparable as pos
with the British prices preceding.

TABLE 3.—*American and British prices of carpets and rugs, June, 1920.*

[British prices f. o. b. British port; American, net wholesale.]

[Per linear yard.]

Description.	British price.	British price (£1/= $4.8665).	British price plus duty and 6 per cent on original price.	Am
	s. d.			
Brussels:				
Carpet, specified as "Best"	12 8	$3.08	$4.04	
9-wire				$3
10-wire, 2-shot	14 0	3.41	4.46	
10-wire, 3-shot	16 0	3.89	5.10	
11-wire, 2-shot	15 1	3.67	4.81	
Rug, seamed, specified as "Best"	13 3	3.22	4.22	
9-wire				4.
Wilton, worsted:				
Carpet—				
270-pitch, 12-wire	21 1	5.33	7.25	
256-pitch, 13½-wire				
Rug, seamed—				
270-pitch, 12-wire	22 3	5.41	7.36	
256-pitch, 13½-wire				
Wilton, wool:				
Carpet—				
256-pitch, 9½-wire	18 0	4.38	5.95	
236-pitch, 9-wire				
Rug, seamed—				
256-pitch, 9½-wire	18 10	4.58	6.23	
256-pitch, 9-wire				

[14] This figure (6 per cent) was that taken by an American importer in stating his expenses in pr
English products.

d British prices of carpets and rugs, June, 1920—Continued.

ription.	British price.	British price (£1/= $4.8665).	British price plus duty and 6 per cent on original price.	American price.
	s. d.			
	22 4	$5.43	$7.39	.....
	22 7	5.49½	7.47	.....
and price per yard	.....	86.94	118.24	.....
	.....	87.92	119.57	.....
	.....	.....	.....	$104.40
	.....	.....	.....	123.75
	.....	$1.35	1.70	$.90
	.....	1.40	1.76	
rug)	29 6	7.18	9.77	4.57–8.16
	12 1	2.94	4.14½	3.65
	.....	.....	.....	4.18
	18 6	4.50	6.35	.....
	.....	.....	.....	7.10
quare yard):				
ol back	31 0	7.54	10.63	13.20
	40 0	9.73	13.72	12.50
	52 6	12.77	18.01	15.60

mporter, with conversions changed to par from $4 to the pound.
mporter.

e British fabric is in quality between the two American prices quoted.
ese grades are comparable.

British prices quoted are below the American—most
he case of Axminster carpet and of some Wiltons.
tapestry and velvet are more favorable to the
acturer; the price quoted for the former is that
the recent price decline. After the addition of
er cent for importers' charges, the British prices
erally somewhat above the American. The con-
ion is the worsted Wilton seamed rug; attention
act that the importer's figures for Wilton, presumably
ade of fabric, show no such discrepancy.

which have been made in the prices of a prominent
somewhat similar to those that have taken place
rices. As stated before, for the standard grades
rican prices had increased between June, 1914, and
between 200 and 300 per cent. The British prices
had increased during the same period, roughly,
nt to 260 per cent for chenille goods, 370 per cent for
d approximately an equal amount for velvet.

previously stated, the preceding price comparison is
sis of prices in effect in June, 1920. The sharp decline
ce in American prices in the latter part of the year
ounterpart so far in the British market. At the time
revision of November, 1920, was announced it was
he Carpet Manufacturers' Association in England had
e no alterations in prices.[15]

pholstery Trade Review, Nov. 15, 1920, p. 52a. At a subsequent meeting (Jan. 15
that no alterations would be made before July (*Idem*, Feb. 15, 1921, p. 46.)

(B) EUROPE.

Compared with the carpet industries of the United States Great Britain, those of continental Europe appear small. In Fr the foundation of the manufacture of carpeting by power-dr machinery dates from 1880, when power looms were introduced f England. In the last available census the total number of v earners employed was given as 7,500 for 1906. In Germany number of wage earners employed in 1907 was 4,614.[16]

These figures, it is believed, represent fairly accurately the c parative importance of these two countries as producers of car ings, and may be compared with the number of wage earners in industry of the United States in 1909—33,307. Other produ countries are Austria, Bohemia, Belgium, Holland, and, to a slight extent, Spain. The hand industry represents but a small portion of the European production; its importance, in relatio the United States, lies in the fact that the product is not n here—is, in fact, totally unsuited for American production—and h the supply must be sought abroad.

The kinds and forms of carpeting produced and used in contine Europe do not differ materially from those in the United St though the lower standard of living represents a proportional res tion on the consumption of floor coverings. As in England, the a more extended use of carpets, as opposed to rugs, than in United States. Germany has given her attention to the manufac of ingrains and cheap chenille products; the latter she attemp to market in the United States, but as they did not meet the requ ments of American taste, her efforts were not successful. S fine Wiltons, on the other hand, have been sent to this coun France makes very few chenille fabrics; her Wiltons are of excel quality.

The extent to which European countries have recovered f the effects of the war differs very markedly among countries. can now obtain German dyestuffs as wanted. Manufactu has been actively resumed in Belgium and Holland, as in Engl Industry in the central regions of France has recovered to a g extent. The carpet industry of Austria is, as are all her indust not yet on its feet; there is great shortage of all the things neces for the prosecution of manufacturing—food, fuel, and raw mate German industry is already making an effort to sell its prod in the United States, and, in the opinion of one of the import it is a German firm which is most likely to sell its carpetings in American market.

[16] Report of the Tariff Board on Schedule K, 1912, p. 174.

CHAPTER IV.

F PRODUCTION IN THE UNITED STATES.

SECTION 1. SUMMARY.

nission, by means of questionnaires, obtained cost
ıpanies engaged in the production of carpets and
ıng the returns, the Commission found a lack of
accounting methods of the firms reporting, especi-
ıution of the overhead, and it was therefore com-
number of minor adjustments in the figures in
ı on a comparable basis. On the whole, however,
are fairly comparable.

the investigation are set forth in Table 1, page 87,
ꝛ the factory costs of producing various kinds of rugs
)15 and 1919, and in subsequent tables which give
With the exception of worsted Wilton, which cost
square yard in 1919, the highest cost of any fabric
ıille Axminster, which ran about $3.40 per square
l somewhat more than $6 in 1919. Wilton fabrics
same range of difference between 1915 and 1919.
ɛapest product reported, ranged from $0.65 to $0.70
in 1915 and from $1.50 to $1.65 in 1919.

re rugs and roll goods are produced in equal volume,
d of rugs, either seamed or seamless, is greater than
ds. For Wilton rugs, both wool and worsted, the
ɔn is from 5 to 30 per cent more than for roll goods;
ꝛ about 8 per cent more. On the other hand, certain
ods are produced at a lower cost than rugs of the
'or example, in 1919 velvet carpeting cost about
in the rug form than in roll goods; Axminster and
ıter, about 12 per cent less. The lower costs of rugs
ed fabrics are probably due to the relative volume
)f the two forms and to the fact that certain mills
ꝛs.

tendency toward a higher cost for rugs than for roll
ɪr shown in Table 1a, page 88, which gives, by com-
centage by which the cost of the one form exceeds
er.

ng the relative costs of producing rugs and roll goods,
portance is the comparative efficiency of the looms.
ugs are assuming a larger place in the factory output
ꝛs are being reduced by increased efficiency of the
ꝛ shown by Table 1b, page 89, which gives the average
loom per 10 hours for the various kinds and forms of

In practically all cases the square-yard production for roll goods exceeds that of the same kind of fabric in rugs; in three out of four cases there has been a reduction per loom per 10 hours for roll goods in 1919 as compared with 1915, while in every case there has been an increase in the production of rugs.

Table 2, page 90, gives the detail of the totals shown in Table 1, i. e. the average costs of material, labor, and overhead (the factors comprising total factory cost) for roll goods, seamed and seamless rugs of the various kinds and fabrics. In every case material is the chief item of total factory cost. Variances between the percentages for labor and overhead are usually due to the manufacturing process through which any particular fabric must pass. For instance, in the production of velvet the labor item is small, constituting not more than 18 per cent of the total cost, whereas in the Wiltons it is larger than overhead, constituting about 22 per cent. Between 1915 and 1919 the cost of labor more than doubled; that of material just about doubled, while the increase in overhead varied.

Table 4, page 96, shows the ratio of the cost of wool to that of total materials for each kind and form of fabric in 1915 and 1919. That the cost of wool was proportionately less in 1919 than in 1915, may be explained in two ways—that less wool was used in 1919 per square yard of product than in 1915, or that other materials (cotton, linen, and jute) have advanced in cost more than wool since 1915. Among the several types of carpetings the proportionate cost of wool to total materials varies greatly—from 48 per cent for tapestry to 83 per cent for chenille Axminster. These facts are of significance if duties are to be levied to compensate any duties which may fall on carpet wools.

In the production of a commodity the raw materials of which may be purchased in a world market (as is the case in carpetings) conversion costs rather than total costs are of significance [1] for tariff purposes. In 1919 conversion costs per square yard of carpeting ranged from 47 cents in tapestry roll goods to $3.39 in chenille Axminster roll goods. It is, however, even more pertinent to compare conversion costs between the several forms of the same fabric. In the case of Wiltons and tapestries, the conversion cost of rugs exceeds that of roll goods approximately 90 per cent and 33 per cent, respectively. On the other hand, the conversion cost of velvet, Axminster, and chenille Axminster roll goods shows an excess over that of rugs, ranging from nearly 50 per cent in the first two to a scant 1 per cent in chenille Axminster.

Supplementary data to the average conversion costs for domestic carpetings are presented on page 98 for comparable costs of competing American and British chenille Axminster floor coverings. The figures show: (1) That the *selling price* f. o. b. New York of imported goods is less than the total *cost* for American goods. For instance, the grade of designed goods sold f. o. b. New York at $2 per square yard, is manufactured in the United States at a cost of $2 per square yard. (2) That the American conversion cost is higher than the combined figures for labor, overhead, and profit of British-made chenilles. The conversion cost per square yard of designed goods made in America is $20, as compared with $9 for conversion and profit

[1] See discussion of Table 5, p. 97.

the British goods. These figures clearly indicate hich this type of floor covering must meet from of a similar type.

ıe financial condition of the wool-carpet industry leaned through the Tariff Commission's study of s for 1915 and 1919 furnished by manufacturers. ɔrought out are as follows: Total assets per square ave generally increased by about 50 per cent since ranging from $2 to $7. An analysis of total assets that the major portion of such increases occurred . There are instances where such increases not ases in fixed assets, but augment the total assets. e company shows an increase in total assets per approximately 25 per cent. Fixed assets in this ıore than 25 per cent, but current assets increased t.

the industry bespeak a healthy condition through- 915 to 1919. This conclusion is supported by the 9, page 103, showing the high and low percentages of een cost and selling price per unit for the various kinds ıbrics as compared with the average. Tapestry roll erences ranging from 94 per cent to 39 per cent, but age indicates an 86 per cent difference. For worsted form the weighted average difference is 47 per cent, range from 83 per cent to 39 per cent.

me profits have been kept in the business, and would ırplus, undivided profits, and reserve accounts. The us, undivided profits, and reserves per square yard, 9, indicates that these accounts have been built up od 1915 to 1919. In all except two of the cases shown en increases averaging 100 per cent—equivalent to an ıse of 90 cents per square yard—over this period of

SECTION 2. GENERAL CONSIDERATIONS.

ing cost were obtained from 39 companies in the trade a questionnaire, and by examination of the books of lishments by representatives of the commission. Such the costs involved from the time the raw material of yarn) was purchased until the product emerged from ready for sale as a floor covering. In some instances ake the wool in the grease and develop it through the ages to the finished carpetings. Others purchase their to be dyed and woven into floor coverings. Conse- term "raw material" has different meanings among anufacturers. As used in connection with costs pre- , it signifies "yarn ready to be dyed and woven into A number of plants were unable to supply figures for ınd 1919, either because business was started subsequent e had destroyed records, records were not kept over that ime, or because the products manufactured in 1915 were able with those made in 1919.

In addition to cost data obtained for the main types of rugs and carpets discussed in this report, some costs were received for machine-made oriental rugs, a phase of the industry now in the experimental stage, but which may have a considerable development in the future. The details of these costs can not be given because of the possibility of revealing confidential information. The various cost factors, however, have the following relation to each other:

	Per cent.
Materials	35
Labor	40
Overhead	25
Total	100

A rug, approximately 9 by 6 feet, of this make was recently advertised at $126 retail, or at the rate of $21 per square yard.

The ingrain branch of the industry is fast passing out of existence. Just as rapidly as ingrain plants can absorb the attendant loss, ingrain looms are either scrapped or converted for use in making floor coverings of fiber (paper) or of fiber and wool. There are now only one or two establishments which produce ingrains, and the values in the trade are decidedly inconsequential. As it was difficult to get accurate costs, and as the manufacturers repeatedly stated that they desired no tariff revision on ingrains, cost data pertaining to their manufacture are omitted.

Originally it was contemplated asking for costs on such forms as were employed by the individual companies, but preliminary visits throughout the industry showed a lack of uniformity in accounting methods. As an alternative, the Tariff Commission prepared a questionnaire and requested that the data furnished conform as nearly as possible with the classification presented.

One of the chief obstacles to obtaining comparable statistics was the lack of standardization in products throughout the trade. Copyrighted trade names have no significance without details as to the structure of the fabric. It was impossible to find one grade of carpeting of a given kind made by all manufacturers, e. g., no standard grade of wool Wilton in roll goods and in seamed and seamless rugs is made by all or, in fact, by any two manufacturers. To overcome this difficulty specifications were outlined for one grade of each kind of floor covering, and manufacturers were requested to submit cost data on goods meeting these descriptions or on those nearest approaching such descriptions. If these specifications differed in any respect from those outlined by the Tariff Commission, certain minor adjustments were made to get the figures on a comparable basis.

Another difficulty in the way of obtaining data was the poor accounting systems of individual firms. Attempts to improve the old systems have in the main been haphazard. The absence of detailed records caused difficulties in separating costs for the several different classes of fabrics and the different forms of the same fabric. In the case of certain plants a substantial business was carried on in other lines of the textile industry, but no accounting for separate lines was maintained. In some instances this side line took the form, not of

of trading in raw materials, which rendered the
still more difficult.
ad expenses for any particular class or grade of
en found to be a mere estimate than an accurate
xpense for the entire plant was determined when-
closed, but for the most part no distribution was
lepartments (i. e., to a Brussels or Wilton, or even
department, if other textiles were produced).
ssion has made no attempt to establish a uniform
ıg such expenses; instead, it has accepted over-
bmitted, with accompanying explanation of the
ch concern reporting. The manner of allocating
ıds upon conditions prevailing at each individual

ses for distributing overhead are in use:
on yardage basis. That is, each yard of product
e of total overhead. (This method may be applied
duct is made and is of a uniform grade.)
on basis of quantity of floor space occupied.
is charged that percentage of overhead which the
d by it bears to the total factory floor space.
on basis of material cost of each unit of product
total material cost for all products.
on basis of direct labor. That is to say, if all
are, say, 50 per cent of total direct labor cost, a
hich has labor cost of $1 should have an overhead
, or, in other words, direct labor for any product is
percentage which total overhead bears to total

ı on basis of a combination of material cost and
ethod outlined in (4).
n on basis of loom hours consumed. A rate is
viding total overhead charges by total of actual
gives the charge per loom hour. The rate is then
nit of production according to the number of loom
ıuired to produce it, as shown by the machine record
t of every grade of production.
everal elements of overhead expenses are distributed
. The item of power, light, and heat, for example,
ed on the basis of actual energy consumed, measured
ırance may be allocated on the basis of fire risk for
pplies by actual amounts used, and depreciation by
each particular building or unit of equipment.
owing out of these several methods are not of serious
the final costs, and hence no attempts to reconcile
made. It is probable that some uniform method
applied, but because of the great diversity in the
ıods of the various firms any scheme of distribution
l reports would have been arbitrary and likely to
ors than it corrected.
tion conducted by the Tariff Commission would doubt-
ed better results had there been closer cooperation

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cy of manufacturers is increasingly to concentrate of rugs, and with the growing scale of manufacture ened.

of rug production is being decreased by greater is indicated by figures showing the average pro- per day for the different types of floor coverings:

Production per loom per 10 hours in the carpet industry.

ing.	Roll goods.		Seamed rugs.		Seamless rugs.	
	Average production.	Average increase or decrease.	Average production.	Average increase or decrease.	Average production.	Average increase or decrease.
	Sq. yds.	*Per cent.*	*Sq. yds.*	*Per cent.*	*Sq. yds.*	*Per cent.*
.....	.....	.....	36	.....	.....	.....
.....	.....	.....	40	+11	.....	.....
.....	29.9	.....	24.4	.....	18.24	.....
.....	26.4	−12	24.7	+ 1	19.94	+ 9
.....	58.2	.....	.....	.....	49.2	.....
.....	49.6	−15	.....	.....	49.8	+ 1
.....	58.7	.....	.....	.....	33.7	.....
.....	54.4	− 7	.....	.....	37.4	+11
.....	34.4	.....	38.1	.....	17.9	.....
.....	35.7	+ 4	40.9	+ 7	19.2	+ 7

in efficiency occur only for roll goods. It is signifi- decreases are for an article in some disfavor with largest decrease occurring, 15 per cent, is in the try. Wilton and velvet carpets show, respectively, nt decrease. Axminster carpets, on the other hand, for both seamed and seamless rugs, increases which as an indication of the strength of the position of

which the excess of rug costs over carpet costs is istent require perhaps some additional explanation. facture the complexity of the Jacquard mechanism high cost of seamless rugs in comparison with other case of tapestry, the persistence of higher costs for due to abnormal or accidental conditions at the time rather than to more general causes.

which costs increased between 1915 and 1919 is evi- gures in Table 2, page 90. The largest increase, that ll goods, amounted to 214 per cent. This advance is e than the next nearest fabric—worsted Wilton roll d Wilton seamed rugs show the least increase—75 mposite of the entire list of increases indicates that ave, in general, more than doubled in the period 1.

presents the technical descriptions of floor coverings sts have been gathered. The later figures in this carpetings of these specifications unless otherwise

TABLE 2.—*Average costs of material, labor, and overhead, for roll goods, and for seamed seamless rugs.*

1919.

Kind of carpeting.	Material.		Labor.		Overhead.	
	Weighted average cost.	Per cent of total.	Weighted average cost.	Per cent of total.	Weighted average cost.	Per cent of to
Brussels:						
Roll						
Seamed						
Seamless						
Worsted Wilton:						
Roll	$4.2330	68.09	$1.3134	21.13	$0.6704	
Seamed	3.6970	62.32	1.2449	20.98	.9908	
Seamless	4.7290	57.94	2.2867	28.01	1.1470	
Wool Wilton:						
Roll	[1] 2.5368	62.94	[1] .8585	21.30	[1] .6348	
Seamed	2.6728	62.77	.9024	21.19	.6828	
Seamless						
Tapestry:						
Roll	1.0588	69.43	.2775	18.20	.1887	
Seamed						
Seamless	1.0365	63.10	.2686	16.35	.3375	
Velvet:						
Roll	1.2139	49.16	.4348	17.61	.8206	
Seamed						
Seamless	1.1688	57.30	.3538	17.35	.5171	
Axminster:						
Roll	1.7449	56.20	.5106	16.45	.8493	
Seamed	1.7675	63.57	.6044	21.74	.4086	
Seamless	1.7747	64.72	.4201	15.32	.5474	
Chenille Axminster:						
Roll	3.5029	50.80	1.8589	26.97	1.5323	
Seamed						
Seamless	3.0544	49.39	2.3508	38.01	.7792	
Smyrna:						
Roll						
Seamed						
Seamless	1.0520	50.55	.5958	28.63	.4333	

1915.

Brussels:						
Roll						
Seamed	$1.1867	79.30	$0.2305	15.40	$0.0793	
Seamless						
Worsted Wilton:						
Roll	1.7186	72.94	.4236	17.98	.2137	
Seamed	2.1175	62.32	.7191	21.17	.5611	
Seamless						
Wool Wilton:						
Roll						
Seamed	1.3268	63.17	.4725	22.49	.3011	
Seamless						
Tapestry:						
Roll	.4180	64.65	.0958	14.81	.1328	
Seamed						
Seamless	.4698	65.53	.1195	16.66	.1277	
Velvet:						
Roll	.5317	49.68	.1516	14.17	.3869	
Seamed						
Seamless	.5273	52.95	.1400	14.06	.3285	
Axminster:						
Roll	.6938	70.06	.1581	15.97	.1383	
Seamed	.8122	64.07	.3208	25.30	.1348	
Seamless	.8711	66.57	.2555	19.53	.1819	
Chenille Axminster:						
Roll	1.7933	52.92	.9285	27.40	.6672	
Seamed						
Seamless	1.4238	41.46	1.3525	39.38	.6580	
Smyrna:						
Roll						
Seamed						
Seamless						

[1] Simple average.

or roll goods, seamed rugs, and seamless rugs, 1915 and 1919.

2	3	1915		1919	
		4	5	6	7
scription.	Form.	Total factory cost [1] per square yard.	Ratio of cost of seamed and seamless rugs to that of roll goods.	Total factory cost [1] per square yard.	Ratio of cost of seamed and seamless rugs to that of roll goods.
			Per cent.		*Per cent.*
-pitch, 9-wire, linen sted face.	Roll.....	.....	.....	.....	.....
	Seamed...	$1.4965	.....	.....	.....
	Seamless..	.....	.....	.....	.....
-pitch, 13½-wire, cot-	Roll.....	2.3559	100.00	$6.2168	100.00
	Seamed...	3.3977	144.22	5.9327	95.43
	Seamless..	.....	.....	8.1640	131.32
-pitch, 9-wire, cotton	Roll.....	.....	.....	[2] 4.0301	100.00
	Seamed...	2.1004	.....	4.2580	105.65
	Seamless..	.....	.....	.....	.....
½-wire, 2-shot, linen	Roll.....	.6466	100.00	1.5250	100.00
	Seamed...	.....	.....	.....	.....
	Seamless..	.7170	110.89	1.6426	107.71
-wire, 2-shot, jute-fill-	Roll.....	1.0702	100.00	2.4693	100.00
en face.	Seamed...	.....	.....	.....	.....
	Seamless..	.9958	93.05	2.0397	82.60
	Roll.....	.9902	100.00	3.1048	100.00
hread, woolen face.....	Seamed...	1.2678	128.04	2.7805	89.56
	Seamless..	1.3085	132.15	2.7422	88.32
Surface: 2-ply woolen ows chenille per inch, woolen backing yarn , 7 ends of 9/4 cotton- arn per inch, 21 ends l jute yarn per inch, 3½ ton catcher warp.	Roll.....	3.3890	100.00	6.8941	100.00
	Seamed...	.....	.....	.....	.....
	Seamless..	3.4343	101.34	6.1844	89.71
n: 10 picks woolen yarn , 98 pitch (strips to the) ends cotton warp to d. Carpet or rug: 4½ enille per inch, 4½ shots ft per inch, 7½ ends warp per inch.	Roll.....	.....	.....	.....	.....
	Seamed...	.....	.....	.....	.....
	Seamless..	.....	.....	2.0811	.....

table are weighted averages except wool Wilton roll goods for 1919.
1919 is a simple average. Data sufficient to ascertain a weighted average were t is believed that this simple average is sufficiently accurate to render a com- of definite value.

ne figures of costs presented here, comparison may (*a*) the costs of the different types of floor covering; ne different forms of carpeting; and (*c*) costs for 1915 ne different types and forms.

parison of costs for the different types it is evident ostly are chenille Axminster and worsted Wilton; l Wilton and Axminster, the medium grade; and nd tapestry.

f the average costs of the different forms of floor itated by reducing the absolute figures given to rela- it is, by establishing a base as 100 per cent and er costs on this base. The calculations in Table 1 l on roll goods as 100 per cent in each case, and costs eamless rugs determined are from this base. For in- of Axminster roll goods in 1915 was 99 cents; for .27; and for seamless rugs, $1.31. Taking 99 cents e relative cost of roll goods thus appears as 100, of 128, and of seamless rugs as 132. Relative figures

TABLE 3.—*Factory costs of carpetings per square yard*—Continued.

Company.	Kind of carpeting.	Material.		Labor.		Overhead.		Total.	
		1915	1919	1915	1919	1915	1919	1915	19
	BRUSSELS—continued.								
	Weighted averages:								
	Roll goods								
	Seamed	$1.1867		$0.2305		$0.0793		$1.4965	
	Seamless								
	Simple averages:								
	Roll goods	1.0205	$2.7305	.1575	$0.4000	.0913	$0.2228	1.2693	$3
	Seamed	1.1492	1.8833	.2244	.4658	.0988	.1398	1.4724	2
	Seamless								
	SMYRNA.								
1	Roll goods								
	Seamed								
	Seamless	.7813	1.2850	.4185	.9576	.3225	.6593	1.5223	2
2	Roll goods								
	Seamed								
	Seamless		.9683		.4660		.3522		1
	Weighted averages:								
	Roll goods								
	Seamed								
	Seamless		1.0520		.5958		.4333		2
	Simple averages:								
	Roll goods								
	Seamed								
	Seamless	.7813	1.1267	.4285	.7118	.3225	.5057	1.5223	2
	CHENILLE AXMINSTER.								
1	Roll goods[1]	1.7867	3.3734	.9767	2.0166	.7166	1.2800	3.4800	
	Seamed								
	Seamless[2]	1.8142	3.4617	1.6608	4.0766	1.4867	3.0750	4.9617	1
2	Roll goods		3.4284		2.0900		1.5745		
	Seamed								
	Seamless								
3	Roll goods								
	Seamed								
	Seamless	1.4475	3.0950	1.3575	2.4375	.5575	.7642	3.3625	
4	Roll goods								
	Seamed								
	Seamless	1.0583	2.9233	1.1050	1.8867	.3350	.3025	2.4983	
5	Roll goods	1.7953	3.5832	.9138	1.7307	.6521	1.6476	3.3612	
	Seamed								
	Seamless								
	Weighted averages:								
	Roll goods	1.7933	3.5029	.9285	1.8589	.6672	1.5323	3.3890	
	Seamed								
	Seamless	1.4238	3.0544	1.3525	2.3508	.6580	.7792	3.4343	
	Simple averages:								
	Roll goods	1.7910	3.4617	.9453	1.9458	.6844	1.5007	3.4207	
	Seamed								
	Seamless	1.4400	3.1600	1.3745	2.8003	.7930	1.3806	3.6075	
	WOOL VELVET.								
1	Roll goods		1.8880		.6929		1.4868		
	Seamed								
	Seamless								
2	Roll goods		1.5176		.5080		.4295		
	Seamed								
	Seamless								
3	Roll goods		1.0773		.3137		.2999		
	Seamed								
	Seamless								
4	Roll goods	.6884	1.3750	.0704	.1867	.0344	.0839	.7932	
	Seamed								
	Seamless	.7777	1.5815	.1096	.2414	.0649	.1129	.9522	
5	Roll goods	.4610	1.0450	.1396	.3692	.5468	1.0492	1.1504	
	Seamed								
	Seamless	.(?)8	1.0720	.1384	.3629	.5411	1.0479	1.1503	
6	Roll goods	.5099	1.1899	.1383	.4212	.2948	.7948	1.0223	
	Seamed								
	Seamless	.5800	1.1777	.1299	.4212	.2949	.7948	1.0140	
7	Roll goods								
	Seamed								
	Seamless	.7771	.9273	.2004	.4583	.0850	1.483	1.1858	

[1] Plain.

[2] Designed.

ry costs of carpetings per square yard—Continued.

	Material.		Labor.		Overhead.		Total.	
	1915	1919	1915	1919	1915	1919	1915	1919
ed.								
	$0.4359	$0.9277	$0.1664	$0.2711	$0.0842	$0.1592	$0.6865	$1.3580
		1.4920		.3541		.3036		2.1497
	.5800	1.3959	.2041	.5329	.2528	.4427	1.0369	2.3715
	.4884	.7647	.1476	.2417	.0767	.1573	.7127	1.1637
	.6515	.9348	.1598	.2317	.1023	.2343	.9136	1.4008
	.5317	1.2139	.1516	.4348	.3869	.8206	1.0702	2.4693
	.5273	1.1688	.1400	.3538	.3285	.5171	.9958	2.0397
	.5620	1.2927	.1400	.4021	.2411	.5608	.9431	2.2556
	.6376	1.2433	.1507	.3311	.1954	.4162	.9837	1.9906
	.7277	1.7673	.7138	1.2214	.1376	.3375	1.5791	3.3262
		1.9636		.7637		1.4769		4.2042
		1.3634		.2943		.3929		2.0506
		1.3634		.2942		.3929		2.0505
	.9340	1.7008	.1219	.2448	.0481	.1266	1.1040	2.0722
	.9467	1.7075	.1536	.3030	.0844	.1668	1.1847	2.1773
	.8093	1.6602	.1283	.2337	.0626	.2108	1.0002	2.1047
	.8347	1.7123	.1528	.2906	.0922	.2669	1.0797	2.2698
	.5891	1.2296	.1754	.3806	.1815	.6231	.9460	2.2333
	.7986	1.7076	.2258	.4918	.2321	.8074	1.2565	3.0680
	.8341	1.7684	.2120	.3529	.2432	.8057	1.2893	2.9270
	.7156	1.6047	.2147	.3873	.0950	.2250	1.0253	2.2170
	.9161	1.6526	.3078	.5725	.1083	.2967	1.3322	2.5218
		1.8253		.3577		.3023		2.4853
	.9686	2.0000	.1744	.3589	.2108	.4508	1.3538	2.8097
	.7086	1.2653	.1677	.3315	.1703	.2346	1.0466	1.8214
	.8358	1.7098	.2236	.4569	.2271	.3128	1.2865	2.4795
	.6938	1.7449	.1581	.5106	.1383	.8493	.9902	3.1048
	.8122	1.7675	.3208	.6044	.1348	.4086	1.2678	2.7805
	.8711	1.7747	.2555	.4201	.1819	.5474	1.3085	2.7422
	.7603	1.5305	.1483	.3748	.1156	.5108	1.0242	2.4161
	.8320	1.7607	.2725	.4872	.1420	.3652	1.2465	2.6131
	.8620	1.6236	.2478	.4191	.1929	.4520	1.3027	2.4947
		1.2372		.4676		.2972		2.0020
		.9547		.2848		.2925		1.5320
	.4903	.9837	.0597	.1600	.0344	.0839	.5844	1.2276
	.5289	1.0771	.0831	.2042	.0649	.1130	.6769	1.3943

TABLE 3.—*Factory costs of carpetings per square yard*—Continued.

Company.	Kind of carpeting.	Material.		Labor.		Overhead.		Total	
		1915	1919	1915	1919	1915	1919	1915	
	TAPESTRY—continued.								
4	Roll goods	$0.3793	$0.8001	$0.1152	$0.3407	$0.1862	$0.5661	$0.6807	$1
	Seamed								
	Seamless	.5202	1.0730	.1584	.4762	.2482	.7548	.9268	2
5	Roll goods								
	Seamed								
	Seamless		1.1217		.2750		.5280		1
6	Roll goods								
	Seamed								
	Seamless	.3715	1.0064	.1315	.2061	.0700	.1567	.5720	1
7	Roll goods								
	Seamed								
	Seamless		1.1435		.2375		.2188		1
8	Roll goods	.3358	.7204	.0913	.1608	.0767	.1573	.5038	1
	Seamed								
	Seamless	.4483	.9608	.1061	.1969	.1023	.2343	.6587	1
9	Roll goods								
	Seamed								
	Seamless	.4401	1.4000	.1379	.3825	.0891	.2827	.6671	2
	Weighted averages:								
	Roll goods	.4180	1.0588	.0958	.2775	.1328	.1887	.6466	1
	Seamed								
	Seamless	.4698	1.0365	.1195	.2686	.1277	.3375	.7170	1
	Simple averages:								
	Roll goods	.4018	.9495	.0887	.3936	.0991	.5179	.5896	1
	Seamed								
	Seamless	.4618	1.0922	.1238	.2828	.1149	.3226	.7005	1
	WOOL WILTON.								
1	Roll goods								
	Seamed	1.1029	2.2544	.8150	1.1532	.2716	.6855	2.1895	4
	Seamless								
2	Roll goods								
	Seamed	1.5662	2.4659	.3889	.7181	.0924	.6443	2.0475	3
	Seamless								
3	Roll goods								
	Seamed	1.3037	2.8918	.3479	.5469	.4927	.9614	2.1443	4
	Seamless								
4	Roll goods		3.6142		.6962		.4225		4
	Seamed								
	Seamless								
5	Roll goods	1.2606	2.4261	.2771	.6001	.1577	.2509	1.6954	3
	Seamed	1.2897	2.6211	.3048	.8259	.1836	.4029	1.7781	3
	Seamless								
6	Roll goods		3.0094		1.1354		.8632		5
	Seamed		3.0120		1.1698		.8632		5
	Seamless								
7	Roll goods								
	Seamed								
	Seamless	1.0212	2.3165	.5026	.9376	.1892	.3500	1.7130	3
8	Roll goods								
	Seamed		2.6189		1.0572		.2904		3
	Seamless								
9	Roll goods		2.1749		.8400		.7905		3
	Seamed								
	Seamless								
10	Roll goods								
	Seamed		2.3796		1.1342		.6392		4
	Seamless								
	Weighted averages:								
	Roll goods								
	Seamed	1.3268	2.6728	.4725	.9024	.3011	.6828	2.1004	4
	Seamless								
	Simple averages:								
	Roll goods	1.2606	2.8062	.2771	.8179	.1577	.5818	1.6954	4
	Seamed	1.3157	2.6062	.4642	.9436	.2600	.6410	2.0399	4
	Seamless	1.0212	2.3165	.5026	.9376	.1892	.3500	1.7130	3
	WORSTED WILTON.								
1	Roll goods								
	Seamed								
	Seamless	2.7351	5.0801	1.4936	2.3958	.5427	1.2751	4.7714	8
2	Roll goods								
	Seamed	1.4883	3.1983	.5233	.6956	.3253	.7557	2.3369	4
	Seamless								

ctory costs of carpetings per square yard—Continued.

g.	Material.		Labor.		Overhead.		Total.	
	1915	1919	1915	1919	1915	1919	1915	1919
itinued.								
.....	$2.4007	$3.5253	$0.8151	$1.2668	$0.7298	$1.3662	$3.9456	$6.1583
.....	1.6469	4.1696	.3151	.7908	.1363	.3312	2.0983	5.2916
.....	.....	3.6476	.....	.9061	.....	.4781	.....	5.0318
.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	1.5318	3.6780	.4961	.9959	.1937	.4570	2.2116	5.1309
.....	1.8026	4.2692	.5509	1.6104	.3047	.8632	2.6582	6.7428
.....	1.8038	4.2682	.6071	1.6835	.3047	.8632	2.7156	6.8149
.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	4.3044	.....	1.1333	.....	.4250	.....	5.8627
.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	.....	.....	.....	.....	.....	.....	.....
.....	.....	4.0179	.....	2.0659	.....	.8867	.....	6.9705
es:								
.....	1.7186	4.2330	.4236	1.3134	.2137	.6704	2.3559	6.2168
.....	2.1175	3.6970	.7191	1.2449	.5611	.9908	3.3977	5.9327
.....	.....	4.7290	.....	2.2867	.....	1.1470	.....	8.1640
.....	1.7248	4.2194	.4330	1.2006	.2205	.5972	2.3783	6.0172
.....	1.8062	3.7703	.6079	1.1135	.3884	.7242	2.8025	5.6080
.....	2.7351	4.5490	1.4936	2.2309	.5427	1.0809	4.7714	7.8608

ed from details submitted by the several manu-
igned to show the variations in costs of material,
l among the different companies, for roll goods,
ss rugs of the same fabrics. These costs are
ds, in order that fluctuations may be registered.
ween the weighted average totals for each form
shown in Table 3 is of interest in supporting
fect that the production of rugs is more efficient,
nsive, than that of roll goods. The majority of
luce rugs. Rug costs have not advanced to as
ave roll goods in the period 1915–1919.
rage figures for chenille Axminster show seamless
ion less than roll goods. This is accounted for by
s doubtless a greater production of seamless rugs
nd that those companies producing seamless rugs
ow figure. This explanation also holds true for
Axminsters.
ods, Axminster, with 214 per cent increases over
reatest of any increases shown. Rugs of worsted
) and chenille Axminster (80 per cent) show the
floor covering costs from 1915 to 1919.
substantiates the conclusion drawn from Table
ave doubled since 1915.
ich wool yarns constitute of the cost of materials
facture is of significance if compensatory duties
he finished product.

TABLE 4.—*Wool—Ratio of cost to total material costs, per square yard of fabric*

Kind of carpeting.	Weighted average.[1]		Simple averag	
	1915	1919	1915	191
	Per cent.	*Per cent.*	*Per cent.*	*Per c*
Brussels:				
Roll	.....	.....	80.62	
Seamed	76.26	.....	78.81	
Seamless	.....	.....	.....	
Worsted Wilton:				
Roll	82.40	79.39	82.30	
Seamed	75.41	79.60	79.86	
Seamless	.....	60.27	65.37	
Wool Wilton:				
Roll	.....	80.81	84.29	
Seamed	79.44	79.36	80.24	
Seamless	.....	.....	58.76	
Tapestry:				
Roll	59.28	47.64	59.64	
Seamed	.....	.....	.....	
Seamless	59.62	48.76	58.36	
Velvet:				
Roll	69.25	58.21	72.62	
Seamed	.....	.....	.....	
Seamless	68.24	58.65	71.43	
Axminster:				
Roll	79.33	71.49	79.86	
Seamed	76.56	64.72	78.02	
Seamless	76.66	63.22	81.01	
Chenille Axminster:				
Roll	87.43	83.47	85.34	
Seamed	.....	.....	.....	
Seamless	82.47	75.19	77.86	
Smyrna:				
Roll	.....	.....	.....	
Seamed	.....	.....	.....	
Seamless	.....	50.64	76.48	

[1] See footnote, p. 86.

Table 4 shows the percentage which wool costs form of the t material cost in each kind of carpet. Percentages derived from l weighted and simple averages are presented. Weighted averages somewhat more accurate, but the simple averages are given as a g where it is impossible to get weighted averages, as, for exam Brussels and wool Wilton roll goods for 1915 and seamless rugs both 1915 and 1919.

In practically every instance wool is less of a material facto seamless than in either of the other two forms of floor coveri The greatest spread between forms occurs in worsted Wiltons 1919, when the wool in roll goods was 79 per cent of the total mat costs, and in seamless rugs, 60 per cent. Chenille Axminster sh the greatest percentage of material costs for wool, and is followe close order by wool Wilton and worsted Wilton. Axminster leads group composed of Axminster, velvet, and tapestry.

It will be observed that wool costs represent less of total mat costs in 1919 than in 1915, being more pronounced in cheaper gr of carpetings (velvets and tapestries) where the ratio of wool to t material costs has decreased approximately 10 per cent. This be accounted for in two ways - that less wool was used in 1919 square yard of product than in 1915, or that other materials (cot linen, jute) have advanced in cost more than wool since 1915.

It is evident that if foreign and domestic manufacturers buy t raw material at practically the same prices—as is the case wi world markets exist, such as those for the various fibers used in m ing carpets - the competitive strength of these producers, so fa

, depends upon the cost of labor and overhead, al factory cost. Table 5 gives comparative con- several kinds of domestic floor coverings.

5.—*Conversion costs (labor and overhead).*

arpeting.	Weighted average.		Ratio to total costs.	
	1915	1919	1915	1919
			Per cent.	*Per cent.*
	$0.3098		20.70	
	.6373	$1.9838	27.06	31.91
	1.2801	2.2357	37.69	37.68
		[1] 3.4337		[1] 42.06
		.8572		25.88
	.7736	1.5852	36.83	37.23
	.2286	.4662	35.35	30.57
	.2472	.6061	34.47	36.90
	.5385	1.2554	50.32	50.84
	.4685	.8709	47.05	42.70
	.2964	1.3599	29.94	43.80
	.4556	1.0130	35.93	36.43
	.4374	.9675	33.43	35.28
	1.5957	3.3912	47.08	49.20
	2.0105	3.1300	58.54	50.61
		1.0291		49.45

not as yet a stable commodity in the industry. It partakes of the nature gures are not taken into consideration in making a study of this table.

posite of labor and overhead charges shown in hile the percentages which conversion costs form are given as of possible statistical interest, ac- ge) costs in dollars form the basis for tariff con- be observed that conversion charges in 1919 cent of total factory cost of American made lly the charges vary from $.4662 per square yard 2 per square yard of chenille Axminster. The russels seamed rugs, 1915, show the lowest per- . However, the advantage in value is held by

hat the conversion charges are generally lower , velvets, and Axminsters—carpets the manufac- hich have been most highly developed in the for those entailing considerable hand work, such and Smyrna. The goods produced in greatest v the lowest actual conversion charges. Ameri- rged ahead where mechanical processes have and processes. The cost of hand work in the an insurmountable barrier to effective competi- idmade floor coverings with imported ones. In

the carpet industry, as well as other industries, American manuf turers have been at a disadvantage in meeting foreign competit with articles the labor element of which runs high, and on su articles protective duties have been effective in stimulating grow On the other hand, where mechanical processes were most fully dev oped with a resulting reduction in labor costs, the competitive po tion of domestic manufacturers has been strong.

The great increase in labor costs between 1915 and 1919 is a reflected in this table. Conversion costs have advanced 350 p cent in Axminster roll goods. From this high point the advan range to the lowest (55 per cent) in chenille Axminster seamless ru

A more important indication of the competitive positions of forei and domestic manufacturers are conversion costs in the Unit States and abroad. As has been pointed out elsewhere in this repo chenille Axminster has been subject in a peculiar degree to compe tion from Great Britain.

It has been possible, through the cooperation of certain importe and of domestic manufacturers, to prepare an exhibit showi comparable costs of competing American and British chenille A minster floor coverings. Due regard has been had in this exhib for the factor of exchange rates.

An American manufacturer furnished figures on two grades chenille rugs or carpets and one grade of chenille roll goods, and cos were obtained f. o. b. England of two grades of chenille rugs carpets of practically the same specifications and of one grade chenille roll goods of different specifications but which competes wi the domestic product.

The comparison of these costs per square yard follows:

Chenille rugs.	Total cost, American.	Selling price f. o. b. England.	
		Normal.[1]	Subnormal.
Plain goods:			
Grade A	$12.26	$8.14	$
Grade B	13.27	9.12	
Designed goods:			
Grade A	24.48	13.38	1
Grade B	25.87	15.45	1

[1] Normal exchange is taken at $4.8665; subnormal exchange is taken at $3.80, in all these calculati

The cost of these two grades, adding the present 50 per cent du and 10 per cent for freight, insurance, etc., is as follows:

Chenille rugs.	Total cost, American.	Selling price f. o. b. New York.	
		Normal.[1]	Subnormal.
Plain goods:			
Grade A	$12.26	$13.02	$1
Grade B	13.27	14.59	1
Designed goods:			
Grade A	24.48	21.41	1
Grade B	25.87	24.72	1

[1] Normal exchange is taken at $4.8665; subnormal exchange is taken at $3.80, in all these calculati

it will be seen that at the rate assessed by the
n manufacturer can sell in America at a price
ican manufacturers' cost except in the instance
e exchange at normal, in which case the Amer-
a leeway for profit of from about 6 per cent
igned goods his costs are from 5 per cent to 15
ever, than the English manufacturers' selling
rmal exchange, and from 34 per cent to 47 per
rice at subnormal.

lable to show English labor costs in chenilles,
materials are purchased in a world market at
countries, and deducting said material costs,
for plain, grade A, $3.46; plain, grade B, $3.70;
3.99; designed, grade B, $4.15, the following

lle rugs.	Labor and overhead, American.	Labor, expense, and profit, English.	
		Normal.[1]	Subnormal.[1,2]
.....	$9.80	$4.68	$2.90
.....	9.57	5.42	3.43
.....	20.49	9.39	6.46
.....	21.72	11.30	7.92

$4.8665; subnormal exchange is taken at $3.80 in all these calculations.
s to call attention to the fact that expenditures for labor are made within
ubject to the exchange rates, as are the prices of British goods sold in the
ion is within the country, and to be considered at par. Present exchange
ice of British products in the United States, but only indirectly the rate

res are for chenille rugs and carpets made for

detailed figures could be obtained for chenille
ecifications. It was possible, however, to obtain
npeting qualities from two English factories
y the same price) and one American factory.

Axminster.	American selling price.	English price in America.	
		Normal.[1]	Subnormal.[1]
.....	$10.50	$9.20	$7.18

t $4.8665; subnormal exchange is taken at $3.80 in all these calculations.

rices include the duty of 35 per cent (act of 1913)
eight, insurance, etc.

th the foregoing discussions, a study of costs,
e labor charges between chenille Axminster and
he United States, is pertinent. The data which

follow were submitted by a domestic manufacturer from act records:

Cost of Axminster and chenille Axminster 9 by 12 rugs, April, 1920.

	Axminster specification, 5.56 by 7.	Chenille Axminster specifica jute back, picks in we inch cut, 6 chenille per
Value of worsted yarn in rug	$11.27	$1
Value of jute filler	1.67	
Value of jute stuffer	None.	
Value of cotton warp in rug	1.42	
Value of fine cotton warp in chenille	None.	
Labor cost:		
Weft weaving, direct	None.	
Weft weaving, indirect	None.	
Rug weaving, direct	1.36	
Rug weaving, indirect	.85	
Total cost to weave one rug	2.21	
Total other labor cost	3.09	
Total labor cost in one rug	5.30	
Overhead cost including Federal taxes	1.65	
Total cost one rug, cost including Federal taxes	28.55	
Average weekly wages of experienced weavers	42.00	
Ratio of labor cost to total cost (14) (per cent)	19	

The exhibit is of especial interest in showing the wide rang in the manufacture of different kinds of carpeting. Axminster is more than five times tha Axminster weaving involves a much hi than that of any other domestic product.

Table 2, p. 90 discloses the fact that the percen in Axminster seamless rugs 15.32 per c Axminster seamless 38.01 per cent). differ slightly from those in the manufacturer's exh and 39.5 per cent. respectively. in Axmin seamless rugs. On the basis of dollars t between the actual manufacturer's exhibit) for labor in 1919. The specific figures representative character of the averages use

SECTION 4. FINANCIAL.

BALANCE SHEETS.

furnished the commission for 1919 show total asse with company investments rang These represent establishments r where only weaving is done, to t form and develop them into It is inadvisable to publish detail company totals, but the investments and are therefore presente

Assets per square yard of product, 1915 and 1919.

Total assets per square yard.		Fixed assets per square yard.		Current assets per square yard.	
1915	1919	1915	1919	1915	1919
$19.4090	$17.5353	$9.7328	$7.4745	$9.6762	$10.0608
12.6080	14.5898	7.1732	5.2105	5.4348	9.3793
10.8717	9.0878	6.2918	3.4436	4.5799	5.6441
1.2493	8.3703	.7237	3.0977	.5256	5.2726
5.0978	6.3293	2.6493	2.0807	2.4485	4.2486
3.7178	6.1910	1.8008	2.6587	1.9170	3.5323
3.6079	5.8864	1.6853	2.5580	1.9226	3.3284
3.1058	4.8839	1.9336	2.2359	1.1722	2.6480
2.2544	4.6179	.9922	1.8313	1.2622	2.7866
4.2284	4.2087	1.1254	.5733	3.1030	3.6354
2.4809	3.5473	1.1877	1.2710	1.2932	2.2763
3.4738	3.3439	1.5016	1.0389	1.9722	2.3050
2.1686	2.5329	.9590	.4667	1.2096	2.0662
1.6316	2.4355	.2416	.0524	1.3900	2.3831
2.0626	2.1301	.9826	.9692	1.0800	1.1609
5.0420	1.6434	2.1637	.4072	2.8783	1.2362
1.2493	.6151	.7237	.2391	.5256	.3760

it will be seen that the assets per square yard of the ng ranged in 1919 from $0.615 to $17.535 and in o $19.409; that is, from the mill located in a rented ns and carrying no inventory, to the one which al estate, buildings, and equipment. Assets for ly increased over those for 1915, an increase ranging t to an abnormal 570 per cent.

writing off values for depreciation and obsolescence erity doubtless caused fixed assets (land, buildings, to decline in most instances in the period 1915–1919. ed from 1.36 to 81.18 per cent. Six of the companies in fixed assets; these increases may possibly be e practice of turning increased earnings to plant

s (inventories, cash, accounts and notes receivable, c.) for 1919, in all except two instances, show marked corresponding period for 1915. These increases occur companies reporting and range in percentage from This may be due to any or all of a number of causes, ods of prosperity, increased cost of materials in in- al increase in production and amount of material car- y, need of more cash and extension of more credit, and naterial markets.

ng the foregoing balance sheet figures, due weight the facts that total assets per unit will vary almost lay, that production in practically all cases could be out increasing fixed assets, and therefore fixed asset ould appear to be decreased. This would not hold nt assets, because, in general, increased production n increased inventories, possibly increased cash to ness and increased credit to jobbers to carry stock. certain of the carpet manufacturers produce textiles ool floor coverings, i. e., curtains, table covers, grass jute carpetings.

ows the abnormal increase of 903.16 per cent.

The difference between costs and selling prices is of some signi
cance and, together with balance sheet figures, furnishes eviden
as to the condition of the wool floor-covering industry.

TABLE 7.—*Differences between costs and selling prices, by kinds and forms of carpetings.*

1	2	3	4	5	Per cent of difference betw cost and selling price unit.		
Form.	Kind.	Unit.	Weighted average cost per unit.[1]	Weighted average selling price[1] per unit.	6 High.	7 Low.	8 Avera
Roll goods	Axminster	Running yard of 27 inches width.	$1.7948	$3.5223	111.67	74.06	9
	Velvet		2.3459	3.2115	67.20	21.02	3
	Tapestry		1.1447	2.1298	94.31	39.12	8
Seamed rugs	Wilton, wool	9 by 12 rug	56.8922	91.6727	92.57	28.93	6
	Wilton, worsted		80.3224	127.1978	82.92	39.41	4
Seamless rugs	Velvet	9 by 12 rug	24.8063	43.3199	91.18	70.24	7
	Tapestry		21.4956	33.9194	75.06	44.01	5

[1] The costs here given are for the last 6 months of 1919, the selling prices are as of June, 1920.

Discrepancies between the figures for weighted average costs in t
above table and those shown in Table 3, pages 91–95, are due to t
omission of certain firms from the compilations in Table 7 because
the lack of complete information on which to base calculatio
Sufficient data were not available to ascertain a weighted avera
cost and selling price for every kind of floor covering.

In drawing conclusions from this table it must be borne in mi
that data from which these figures are tabulated are original; i.
they have not been adjusted, but are the actual figures as furnish
by manufacturers.

Apparently no kind or form of carpeting has the advantage over a
other as regards returns per unit; e. g., roll goods show both t
largest and the smallest return per unit, while neither of the oth
two forms shows any general trend.

Table 8, showing the actual percentage of difference between co
and selling prices per unit, by companies, should be read in conn
tion with Table 7.

TABLE 8.—*Differences between costs and selling price per unit of carpeting, b companies.*

Company.	Kind of fabric.	Difference between costs and selling price per unit.	Company.	Kind of fabric.	Differen between c and selli price per u
		Per cent.			*Per c*
1	Wilton, worsted	82.92	16	Tapestry	4
2	do	81.18	17	do	3
3	do	80.18	18	Velvet	9
4	do	65.62	19	do	7
5	do	39.41	20	do	6
6	do	34.90	21	do	5
7	Wilton, wool	92.57	22	do	8
8	do	67.08	23	do	2
9	do	60.20	24	Axminster	11
10	do	44.31	25	do	1
11	do	28.93	26	do	1
12	Tapestry	94.31	27	do	1
13	do	75.08	28	do	1
14	do	63.62	29	do	1
15	do	60.66			

ifference between costs and selling prices varies in velvets to 111.67 per cent in Axminsters. iat there are 20 of the 29 companies for which and for 22 of the 29 it is over 50 per cent. produced in greater quantity, involve slightly cheaper goods, and sell faster than Axminsters, more hand labor, and are more expensive and

JNDIVIDED PROFITS, AND RESERVES.

)osed of as a direct cash distribution to stock- of stock dividends, or they may be kept in the undivided profit, or reserve. It is possible that ed to reduce liabilities through the purchase of The Tariff Commission did not ask for state- ias it required consecutive balance sheets over a hich profits might be deduced. In the balance wever, there are items for surplus, undivided /hich represent division of earnings, and it is 'isons of the total of these per square yard of ι the total for 1919 will corroborate deductions ibles 6, 7, and 8.

e condition of surplus, undivided profits, and square yard of product at the end of the fiscal for comparable companies, and notes increases ι period.

lus, undivided profits, and reserves, 1915 and 1919.

3	4	1	2	3	4
irplus, ilvided rofits, and serves, square yard.	Per cent of increase 1919 over 1915.	Company.	Year.	Surplus, undivided profits, and reserves, per square yard.	Per cent of increase 1919 over 1915.
11.0412	.....	7.....	1915	1.2573	61.84
10.0816	[1] 8.69		1919	2.0347	.....
1.0449	.....	8.....	1915	.3827	202.90
1.3048	24.87		1919	1.1592	.....
.1195	.....	9.....	1915	.9007	87.96
1.1432	856.60		1919	1.6929	.....
1.2089	242.65	10.....	1915	.5848	108.67
4.1512	.....		1919	1.2203	.....
2.1587	102.02	11.....	1915	.5154	[1] 53.74
4.3608	.....		1919	.2384	.....
.3559	.....	12.....	1915	.0545	151.75
.8032	125.68		1919	.1372	.....

s, undivided profits, and reserves for each com- ed by its total square-yard production to deter- olumn 3. While this table (column 4) shows a from a minus 53.74 to a plus 856.60, it should he 12 companies show increases from 24.87 to one the abnormal increase of 856.60 per cent.

These figures clearly indicate that the industry has passed throug
period (1915–1919) of prosperity.[5]

While an increase in surplus, undivided profits, and reserves in
cates that a profit has been made, a decrease in the total of th
accounts does not prove that the business has lost money.
examination of the balance sheets of the two companies which sh
decreases leads to the conclusion either that capital stock w
increased out of surplus, or that production increased over the per
more rapidly than did surplus. A further possibility is that reser
may have been wiped out by replacement of equipment.

It is possible that the companies included could not have distr
uted surpluses as profits—it may have been necessary to put su
funds into the business in order to care for expansion or secure
financial foundations of the organization. The surpluses shown
the table bespeak efficient management and a healthy condition
the business over the period of years considered.

[5] In fairness to the companies whose figures are shown, it should be pointed out that the 1915 figur
doubtless subnormal (compared to a pre-war normal), because of the drain of the preceding lean years
not to the extent that the 1919 figures are abnormal (also compared to a pre-war normal) on account o
and post-war activity. No attempt is made to state what normal is at present.

CHAPTER V.

TARIFF CONSIDERATIONS.

ECTION 1. TARIFF HISTORY.

ating to rugs and carpets in the act of 1913 do ecided changes from the provisions of preceding 1867. In the act of that date Aubusson and ere specifically provided for; chenille was added e act of 1883, and moquette in the act of 1890. or plain" dates from 1890. These phrases have gh the act of 1913. In the act of 1867 provision was made in the phrase "Saxony, Wilton, and ets wrought by the Jacquard machine." This from subsequent tariffs. The phraseology ap- cts to Brussels has the same history—that is, the y the Jacquard machine" is dropped after 1867 in" added in1890. Velvet carpets were specified in the tariff acts of 1867 and 1883 and the phrase added by the act of 1890. The phraseology for as gone through a similar development. Ingrain pecified as two-ply and three-ply throughout the of 1867. The term "yarn Venetian" appears in paragraph in the tariff acts of 1867 and 1883; h the term "wool Dutch." The term "worsted pears in the treble-ingrain paragraph in the acts It was replaced with "all chain Venetian." "Art mentioned in the act of 1890. "Druggets and vided for in the tariffs from 1867 to 1913; the acts added "felt carpeting" in the same paragraph. ls other than wool were provided for in the act of nt acts, the materials named being in each case on; and hemp and jute were provided for in the

covered by three phrases—"carpets woven whole tal, Berlin, and other similar rugs;" and "rugs for appears in the tariff act of 1867. The second phrase e act of 1890 in the same paragraph with "carpets ooms"; it was first split off in 1897, when these ractically their modern form. The term "rugs for st in the act of 1894, and was retained in follow- rlier acts the term "rug" is not so modified.
utline compares provisions made for the various d rugs by the tariff acts from 1867 to 1913.

AXMINSTER AND ORIENTAL.

Act of—	Par.	Classification.	Rate of duty.
1867....	.....	On Aubusson and Axminster carpets, and carpets woven whole for rooms (Rev. Stat., sec. 2504).	50 per cent ad valorem
1883....	369	Aubusson, Axminster, and chenille carpets, and carpets woven whole for rooms.	45 cents per squa yard, and in ad tion thereto, 30 p cent ad valorem.
1890....	399	Aubusson, Axminster, Moquette, and Chenille carpets, figured or plain, carpets woven whole for rooms, and all carpets or carpeting of like character or description, and oriental, Berlin, and other similar rugs.	60 cents per squ yard, and in ad tion thereto, 40 p cent ad valorem.
1894....	287	Aubusson, Axminster, Moquette, and Chenille carpets, figured or plain, carpets woven whole for rooms, and all carpets or carpeting of like character or description, and oriental, Berlin, and other similar rugs.	40 per cent ad valore
1897....	372	Aubusson, Axminster, Moquette, and Chenille carpets, figured or plain, and all carpets or carpeting of like character or description.	60 cents per squ yard, and in ad tion thereto, 40 cent ad valorem.
	379	Carpets of every description woven whole for rooms, and Oriental, Berlin, Aubusson, Axminster, and similar rugs.	10 cents per squ foot, and, in ad tion thereto, 40 cent ad valorem.
1909....	384	Aubusson, Axminster, moquette, and chenille carpets, figured or plain, and all carpets or carpeting of like character or description.	60 cents per squ yard and in ad tion thereto, 40 cent ad valorem.
	391	Carpets of every description, woven whole for rooms, and Oriental, Berlin, Aubusson, Axminster, and similar rugs. *Provided*, That in the measurement of all mats, rugs, carpets, and similar articles, of whatever material composed, the selvage, if any, shall be included.	10 cents per squ foot, and 40 per c ad valorem.
1913....	293	Aubusson, Axminster, moquette, and chenille carpets, figured or plain, and all carpets or carpeting of like character or description.	35 per cent ad valore
	300	Carpets of every description, woven whole for rooms, and Oriental, Berlin, Aubusson, Axminster, and similar rugs.	50 per cent ad valore
1922....	1116	Oriental, Axminster, Savonnerie, Aubusson, and other carpets and rugs, not made on a power-driven loom; carpets and rugs of oriental weave or weaves, produced on a power-driven loom; chenille Axminster carpets and rugs, whether woven as separate carpets and rugs or in rolls of any width; all the foregoing, plain or figured.	55 per cent ad valore
1922....	1117	Axminster carpets and rugs, not specially provided for; * * *..	40 per cent ad valore

WILTON.

1867....	.....	* * * Saxony, Wilton, and Tornay velvet carpets, wrought by the Jacquard machine.	70 cents per squ yard, and, in ad tion thereto, 35 cent ad valorem.
1883....	370	Saxony, Wilton, and Tournay velvet carpets	45 cents per squ yard, and in addit thereto, 30 per c ad valorem.
1890....	400	Saxony, Wilton, and Tournay velvet carpets, figured or plain, and all carpets or carpeting of like character or description.	60 cents per squ yard, and in ad tion thereto, 40 cent ad valorem.
1894....	288	.....do	40 per cent ad valore
1897....	373	.....do	60 cents per squ yard, and in ad tion thereto, 40 cent ad valorem.
1909....	385	.....do	Do.
1913....	294	.....do	30 per cent ad valore
1922....	1117	* * * Wilton carpets and rugs; * * *	40 per cent ad valore

BRUSSELS.

1867....	.....	* * * Brussels carpets wrought by the Jacquard machine	44 cents per squ yard, and in ad tion thereto, 35 p cent ad valorem.
1883....	371	Brussels carpets	30 cents per squ yard, and in ad tion thereto, 30 p cent ad valorem.

BRUSSELS—Continued.

Classification.	Rate of duty.
, figured or plain, and all carpets or carpeting of or description.	44 cents per square yard, and in addition thereto, 40 per cent ad valorem.
.....	40 per cent ad valorem.
.....	44 cents per square yard, and in addition thereto, 40 per cent ad valorem.
.....	Do.
.....	25 per cent ad valorem.
al carpets and rugs; * * *.....	40 per cent ad valorem.

VELVET.

it velvet and tapestry velvet carpets, printed or otherwise.	40 cents per square yard, and in addition thereto, 35 per cent ad valorem.
and tapestry velvet carpets, printed on the warp).	25 cents per square yard, and in addition thereto, 30 per cent ad valorem.
apestry velvet carpets, figured or plain, printed on or otherwise, and all carpets or carpeting of like r description.	40 cents per square yard, and in addition thereto, 40 per cent ad valorem.
apestry velvet carpets, figured or plain, printed on or otherwise, and all carpets or carpeting of like r description.	40 per cent ad valorem.
.....	40 cents per square yard, and in addition thereto, 40 per cent ad valorem.
.....	Do.
.....	30 per cent ad valorem.
vet * * * carpets and rugs; * * *.....	40 per cent ad valorem.

TAPESTRY.

pestry Brussels carpets printed on the warp or .	28 cents per square yard, and in addition thereto, 35 per cent ad valorem.
Brussels carpets, printed on the warp or otherwise....	20 cents per square yard, and in addition thereto, 30 per cent ad valorem.
Brussels carpets, figured or plain, and all carpets or g of like character or description, printed on the warp rise.	28 cents per square yard, and in addition thereto, 40 per cent ad valorem.
.....	42½ per cent ad valorem
.....	28 cents per square yard, and in addition thereto, 40 per cent ad valorem.
.....	Do.
.....	20 per cent ad valorem.
tapestry carpets and rugs; * * *.....	40 per cent ad valorem.

INGRAIN (*Three-ply*).

treble ingrain, three-ply, and worsted chain Venearpets.	17 cents per square yard, and in addition thereto, 35 per cent ad valorem.
ngrain, three-ply, and worsted-chain Venetian carpets...	12 cents per square yard, and in addition thereto, 30 per cent ad valorem.
ngrain, three-ply, and all chain Venetian carpets.....	19 cents per square yard, and in addition thereto, 40 per cent ad valorem.

Act of—	Par.	Description	Rate of
1890	381	[illegible]	35 per cent
1894	217	[illegible]	40 cents p yard, and tion ther cent ad va
1897	218	do	Do.
1913	296	do	30 per cent a
1922	1117	[illegible]	35 per cent a

DRUGGETS, Etc.

Act of—	Par.	Description	Rate of
1867		* * * Tam Venetian and brussels ingrain carpets	12 cents p yard, and tion there cent ad v
1883	375	Tam Venetian and brussels ingrain carpets	6 cents per s and in thereto, 3 ad valore
1890	405	Wool Dutch and brussels ingrain carpets	14 cents p yard, and tion there cent ad v
1894	288	do	30 per cent a
1897	279	do	15 cents p yard, and thereto 40 valorem.
1909	300	do	Do.
1913	299	do	30 per cent a
1922	1117	* * * Ingrain carpets, and ingrain rugs or art squares, of whatever material composed, and carpets and rugs of like character or description, not specially provided for.	25 per cent a

DRUGGETS AND FELT CARPETING.

Act of—	Par.	Description	Rate of
1867		* * * druggets and bockings, printed, colored, or otherwise	25 cents p yard and tion there cent ad va
1883	376	Druggets and bockings, printed, colored, or otherwise	15 cents p yard and tion there cent ad va
1890	406	do	22 cents p yard and tion there cent ad va
		Felt carpeting, figured or plain	11 cents p yard and tion there cent ad va
1894	294	Druggets and bockings, printed, colored, or otherwise, felt carpeting, figured or plain	30 per cent a
1897	380	Druggets and bockings, printed, colored, or otherwise	22 cents p yard and tion there cent ad va
1909	382	do	Do.
1913	301	do	20 per cent a
1922	1117	* * * All other floor coverings, including mats and druggets, not specially provided for, composed wholly or in chief value of wool.	30 per cent a

CARPETS OTHER THAN WOOL.

Act of—	Par.	Description	Rate of
1867		* * * carpets and carpetings of wool, flax, or cotton, or parts of either or other material not otherwise herein specified.	40 per cent a
1883	377	Stair or hall carpeting	6 cents per s
	378	Carpets and carpetings of wool, flax, or cotton, or parts of either or other material, not otherwise herein specified.	40 per cent a
1890	407	Carpets and carpeting of wool, flax, or cotton, or composed in part of either, not specially provided for in this act.	30 per cent a
1894	295	do	30 per cent a

CARPETS OTHER THAN WOOL—Continued.

Classification.	Rate of duty.
ırpets and carpeting of wool, flax, or cotton, or composed in part of either, not specifically provided for in this act.	50 per cent ad valorem.
rpets and carpeting of wool, flax, or cotton, or composed in part of any of them, not specially provided for in this section, ınd mats, matting, and rugs of cotton.	Do.
rpets and carpeting of wool or cotton, or composed in part of ither of them, not specially provided for in this section, and on nats, matting, and rugs of cotton.	20 per cent ad valorem.
* * carpets, carpeting, mats, matting, and rugs, made holly of cotton, flax, hemp, or jute, or a mixture thereof,	35 per cent ad valorem.
RUGS AND ARTICLES MADE FROM CARPETING.	
* and mats, rugs, screens, covers, hassocks, bedsides, id other portions of carpets or carpeting shall be subjected to e rate of duty herein imposed on carpets or carpeting of like aracter or description, and the duty on all other mats (not clusively of vegetable material), screens, hassocks, and rugs, all be—	45 per cent ad valorem.
* and mats, rugs, screens, covers, hassocks, bedsides, and ıer portions of carpets or carpetings, shall be subjected to rate of duty herein imposed on carpets or carpeting of like ıracter or description; and the duty on all other mats not clusively of vegetable material, screens, hassocks, and rugs, ll be—	40 per cent ad valorem.
, rugs, screens, covers, hassocks, bedsides, art squares, and er portions of carpets or carpeting made wholly or in part ool, and not specially provided for in this act, shall be sub- ed to the rate of duty herein imposed on carpets or carpet- of like character or description.	
rugs for floors, screens, covers, hassocks, bed sides, art ares, and other portions of carpets or carpeting made wholly part of wool, and not specially provided for in this Act, l be subjected to the rate of duty herein imposed on carpets ırpetings of like character or description.	
rugs for floors, screens, covers, hassocks, bed sides, art res, and other portions of carpets or carpeting made wholly part of wool, and not specially provided for in this section, be subjected to the rate of duty herein imposed on carpets rpetings of like character or description.	
·ugs for floors, screens, covers, hassocks, bed sides, art es, and other portions of carpets or carpeting, composed y or in part of wool, and not specially provided for in this n, shall be subjected to the rate of duty herein imposed rpets or carpeting of like character or description.	
, hassocks, and all other articles composed wholly or in f carpets or rugs, and not specially provided for,	30 per cent ad valorem.

s are listed with carpets and dutiable, according to character or description, under ıphs 1116 or 1117.

SECTION 2. TREASURY DECISIONS.

summarizes by tariff paragraphs the construction of the tariff act of 1913 pertinent here.

inster chenille carpeting, 12 by 75 feet, imported in rolls ter importation to meet a particular size demanded , is dutiable under this paragraph and not as "car- voven whole for rooms" under paragraph 300. D. 36216, of 1916; followed in Abstract 40666 of *r carpets woven whole* for rooms and Axminster rugs y classified under paragraph 300. (Abstracts 40666 7.)

ed by the Court of Customs Appeals in 1921, it was ginally there was no such thing as a machine-made carpet, as is shown by a review of the history of ears that at the time of the passage of the tariff act of this country generally and uniformly included in Axminster" both the handmade and the machine-

made Axminster. A review of the history of the subject shows th the word "chenille" was and is commonly and properly used to d tinguish that kind of carpet or rug from all other kinds. No contra commercial designation appears at the time of the enactment of t tariff act of 1913, which was held to differentiate chenille and Axmi ster carpets and rugs, and as chenille rugs are made from portions chenille carpets or carpeting and are not enumerated in paragraph 3 they were held to be properly dutiable under paragraph 293, by virt of paragraph 303. (United States *v.* Trorlicht, 10 Ct. Cust. Appls., 2 of 1921, followed in Abstracts 44262, 44290, 44444, 44454, 444 44611, 44625, 44648 of 1921, 44746, 44908, 44964, 45025, 450 45083, 45316 of 1922, and numerous other abstracts.

Par. 294. Seamless Wilton rugs, machine-made, are dutiable un this paragraph by virtue of paragraph 303 and not under the pr sion of paragraph 300 for "Oriental, Berlin, Aubusson, Axmins and similar rugs" (Beuttell *v.* United States, 7 Ct. Cust. Appls., 3 of 1916; United States *v.* Fenton, 8 Ct. Cust. Appls., 239; Uni States *v.* Carson, 8 Ct. Cust. Appls., 240; Beuttell *v.* United State Ct. Cust. Appls., 409, of 1918; followed in Abstract 44595; Beuttel United States, 9 Ct. Cust. Appls., 38, of 1919), nor under paragr 300 as "carpets * * * woven whole for rooms" (United State Snellenburg, 9 Ct. Cust. Appls., 59, of 1919).

Par. 297. Tapestry Brussels rugs, machine-made, are dutia under this paragraph by virtue of paragraph 303, and not under provision in paragraph 300 for "Oriental, Berlin, Aubusson, minster, and similar rugs." (7 Ct. Cust. Appls., 356, supra.)

Par. 300. This paragraph relates to *rugs* that are *handmade hand tufted,* and to machine made Axminster. (7 Ct. Cust. App 356; 8 Ct. Cust. Appls., 239, 240, 409, 428; and 9 Ct. Cust. App 38, supra.) *Axminister rugs*, machine-made, are dutiable eo nom under this paragraph. Though formerly Axminster rugs were ha made, the evidence is to the effect that the term "Axminster" generally and commonly understood to cover and include the machi made product as well as the handmade, and that the handmade art constitutes but a small part of the commerce in Axminster r (8 Ct. Cust. Appls., 409, supra; United States *v.* Gertzen Co., 8 Cust. Appls., 428, of 1918, see United States *v.* Vandegrift, 11 Cust. Appls., ——; T. D. 39192 of 1922.) *Rugs* imported from Jap found to be composed of *cotton, jute,* and *cattle hair*, cattle hai chief value, there being no evidence from which to determine whet they are handmade or hand tufted, were held dutiable under this pa graph. (Abstract 42280 of 1918.) The provision in paragraph 300 "*carpets * * * woven whole for rooms*" does not include all r which are woven whole, nor can the question whether or not a is classable under this paragraph be determined by the size of rug. It refers to a carpet which has been specially woven for a p ticular room. (9 Ct. Cust. Appls., 59, supra.) *Samples of r* showing qualities and patterns from which to take orders and to disposed of at a comparatively small price, having a commer value, were held dutiable under this paragraph. (Abstract 3953 1916.) Chinese rugs, handmade and hand tufted, and of orie design, were held dutiable at 50 per cent ad valorem under paragr 300 as oriental or similar rugs and not under paragraph 293 at per cent. (Abstract 45161 of 1922.)

Green baize wool cloth, 36 to 72 inches wide and about 30 claimed dutiable under this paragraph, was held dutiable th under paragraph 288, the testimony being insufficient a commercial definition of the term "bockings." (Ab- 3 of 1916.)

Sundour rugs, found to be used as floor coverings, were le as rugs of cotton under this paragraph rather than as mats under paragraph 264. (Abstract 37303 of 1915, Abstract 38314 of 1915.) Under date of August 5, 1922, he Treasury Department, in harmony with T. D. 28637 36551, issued instructions to the customs officers that ndour rugs, jacquard figured, and composed in chief ton chenille, were to be assessed with duty at the rate of ad valorem under provisions of paragraph 258 of the f 1913. (T. D. 39224.). Cotton rugs made with a ve invoiced as "washable cotton bath mats" were found hin the ordinary meaning of the term "rugs," the evidence t they are known in the trade as bath rugs rather than ts, and were held dutiable under this paragraph rather aph 264. (Abstract 38503 of 1915; followed in Abstract 16 and Abstract 44882 of 1922.)

le of straw and cotton, the straw composing the weft and the warp, which latter, thickened in places to form a design, were held properly dutiable under the provision h 272 of the act of 1913 for "rugs manufactured from l, and having a warp of cotton" rather than as "rugs of ler paragraph 302. (G. A. 8384, T. D. 38525, of 1920; Abstracts 44159, 44249, and 44667 of 1921.)

Rugs, made up of carpets or carpeting, were held dutiable ppropriate paragraph for carpeting rather than under 91 of the act of 1909 or 300 of the act of 1913. (G. A. 34816, of 1914, and T. D. 35062 of 1915.)

chenille rugs.—Certain Axminster chenille rugs were within paragraphs 293 and 303 of the act of 1913, which er Axminster chenille rugs, rather than within paragraph inster rugs. (G. A. 3814, T. D. 38236, of 1920; affirmed, s *v.* Trorlicht, 10 Ct. Cust. Appls., 254, of 1921.) Rugs nning lengths of 50 to 100 yards, which running lengths are cut at a point indicated by the design into separate npleted by binding the ends, were held to be dutiable raph 293 by virtue of paragraph 303 and not under 00. The court said that if it be shown that rugs are ortions of carpets or carpeting, then by virtue of para- ey are subject to the rate of duty imposed by the tariff ts or carpeting of like character or description in para- (United States *v.* Vandegrift, 11 Ct. Cust. Appls., —; of 1922. Petition for a rehearing denied, 11 Ct. Cust. D. 39192; followed in Abstracts 45382, 45501.)

SECTION 3. ADVANTAGES AND DISADVANTAGES OF THE AMERIC MANUFACTURER.

(A) MACHINE-MADE CARPETINGS.

The position of the American carpet industry in world trade been covered in detail in the preceding pages of the report. T section will present only a general summary of what has gone bef

The United States is by far the largest producer of rugs and car in the world, and provides a home market of a much greater consum power than that of any other nation. She differs markedly from nearest competitor, Great Britain, in being to a very much less ex a trader in carpets and rugs with other countries, whether of dom or of foreign manufacture. Although exports have bulked ra large, those to individual foreign countries have never taken on steady character which indicates a well-developed foreign marke

Size, length of establishment of the industry and the resul financial strength, the development of mechanism in advance of which has taken place in other countries, all represent distinct ad tages for the domestic manufacturer over those of other count To these advantages accruing from the development of the indu may be added the consuming power of the domestic market, w has furnished opportunity to the domestic producer, at the same that the tariff has hindered attempts on the part of foreign ma farmers to take advantage of it. The advantage which the la scale manufacturer has in comparison with the small is one posse in general by the American industry, much of the product of whic made by firms of outstanding size.

A factor of importance to the American maker has been his adv tage in meeting and developing the taste of the domestic marke [illegible] meet vigorously the conditions arising from the unpopula of their product. even for them it may be said that the necessit change has resulted in a shift from wool to fiber (paper) and wool fiber carpetings. a kind of floor covering which has found fa with the public. There has been a similar change in taste in increasing preference for rugs to carpets, and the manufactu have turned their attention vigorously to the development of production. Progress has been indicated by the increased efficie of rug looms, relative to the carpet looms, the decreasing average of the more popular product. and the more pronounced price dec which this form was subject to after July, 1920.

[illegible] of production, so far as indicated by the information avail the Tariff Commission, is greater in the United States than in G [illegible] while the hours of labor (48) are the same for these [illegible] and also for Germany (by general law).

The [illegible] advantages under which American industry labors are c [illegible]. The most obvious of these, and that which is attracting [illegible] as an element in the general commercial situatio [illegible] of exchange, which tends to give the impo a [illegible] advantage in the domestic market. The price fig [illegible] have been presented show the situation at par exch [illegible] Britain and the United States; with the British po [illegible] for a long period fully one-fourth and even now by

r one-tenth, the advantage of the British producers is

ıange situation is a temporary one, in the sense that ıt, however slow, may be expected ultimately to do away equalities existing at the present day. The permanent which both the British and the continental industries the lower wage scale of the European worker. The which has been presented, showing differences between American weaving rates, indicates that wage differences the different types of fabrics. On Brussels, for in- r as weavers are concerned, the figures indicate a higher British, while for Wiltons the American weaving rates 3ritish by a large percentage. For the other types of igures indicate that the British wages are the lower, but ;e amount. The use of two looms to one weaver in the ı for Axminster and tapestry results in a lower rate here. ition between countries with differing wage scales, the the lower has a greater advantage in those articles in which the labor forms the larger percentage. In the pet industry, this percentage is highest for chenille r which it amounted to 38 per cent during the last six 19. The imitation oriental stands in the same class; nas are left out of consideration because of their small ıd the lack of foreign production, come Wiltons, show- ately 21 per cent, though seamless rugs (a specialty 28 per cent. Tapestry, velvet, and Axminster (except med rugs) show a distinctly lower percentage of labor gures which have been presented for Brussels seamed nall percentage of labor costs—comparable to that for mentioned types of carpetings—but it is not believed of a sufficiently comprehensive nature to indicate the ussels rugs, and more general considerations would ı nearer Wilton fabrics.

Axminster the advantage to foreign goods evident from abor cost is not subject to any marked compensating ıer than the vigorous growth which has taken place an industry under war conditions. The British— ıtch firm—have applied much effort to the production n of this fabric, and have gained market, reputation, ages of large-scale production. In Great Britain, to t than is true in the United States, this fabric has lard type of floor covering. In the production of ons are largely reversed; American effort has been s this product, as British toward chenille Axminster, is in general demand in the market, while the chenille very much more restricted demand. Both of these rted; for Wiltons it may be stated that a quality has ı the United States that the foreign producer finds

(B) HANDMADE CARPETING.

ıre of carpeting by hand has been attempted in this attempt was not successful. Only a low standard illingness to undertake the tedious labor involved,

would make possible production able to meet competition from oriental, or, in fact, from the European product. The pre machine-made product, reproducing faithfully the Sehna we sells at a price below the general level of prices for fine orie products, though well above other machine products, with exception of some chenille Axminsters. In competition with orien its disadvantage lies simply in the fact that it is a machine prod and thus lacks the artistic and individual character of the handm rug; and it is this characteristic which to a great extent account the market found by the latter in the United States. Sale for European hand-tufted goods is found because of their high qua from the point of view both of artistic merit and workmanship latter assuring good wearing quality). The price obtained sta them clearly as articles of luxury. An exception to the gene noncompetitive position of these products may be found in their in hotels, in so far as such use is dependent upon the considera that the investment in the higher priced article will mean gre return on account of its greater durability. A final considera regarding handmade products is that although they comprise 80 per cent of the imports and hence are of great importance from point of view of the tariff, they form only a small proportion of total value of the domestic trade in wool rugs and carpets, a corresponding less proportion of the floor space covered by t articles.

Section 4. Classification and Duties.

(a) classification.

The analysis of carpetings according as they are hand or mach made, or belong to the different types or forms, which runs through this report, and on which the cost study was based, was adopted v the view of its possible application to classification of these prod in the tariff. General competitive conditions have been indic in accordance with this arrangement, and the cost survey has b undertaken to establish American costs, as far as possible, for typical machine-made goods of the various classifications, as a g to their relative competitive position and thus to the fixing of ra A recapitulation of the distinctions made follows, with conclus as to the feasibility of its application to tariff classification and ra

Handmade versus machine-made.—The most general distinc to be drawn between wool rugs and carpets is that differentia the hand from the machine product. Technically, it is a ques of whether or not the power loom was used in the production of fabric. The hand loom is to-day virtually nonexistent in the Am can carpet industry. In competitive position, hand and mac products rest on a very different basis; the profitable productio handmade carpetings in the United States is not possible, and t is no hand industry with which that of the Orient or Europe c petes, while the American machine industry is the largest in world, and meets competition of European machine-made goo although such goods do not form a large factor on the mar From the fiscal point of view, the two classes of products are q distinct: The first is, in general, a noncompetitive, luxury produ the imports of which would not be greatly affected by the height the duty, and a duty on which is therefore to be regarded as a sou

the second is a competitive product, and the duty may as protective as well as a source of revenue.

abrics.—Within the machine-made fabrics, division has etween the different types—that is, between the different which the different carpets derive their names. Here ns are clear;[1] in fact, probably clearer than for any product. In costs and prices these different fabrics or less distinct classes, though it is to be noted that the etween Axminster, tapestry, and velvet are less than n and the other types. Two types differ markedly The product made on the power loom which imitates riental weave has only recently been marketed, and ed at a relatively high labor cost. This loom is open n from looms established abroad to produce the same econd of these types is chenille Axminster, which also labor costs, and in which the long-established British s active competition. The statement[2] just made ages of labor cost involved in the production of the is indicative of the difference in competitive position pes.

classification used in this report has involved not only between the hand and machine product and the of fabrics, but also between the different forms—ed rugs, seamless rugs. The results of the cost study his distinction between forms for fabrics produced s are presented on pages 91 to 95. For tapestry the es indicate an additional cost, for seamless rugs, of er cent. For the other fabrics the variations are so ent further generalization of this kind. For velvet gs than for carpets appears in four out of the eight nd in one out of the three given for seamless Ax- t such differences are extremely slight, and can not ignificant. It can not be said that there has been r the excess cost of rugs to have become less or ne five-year period shown; in some cases it has in- s decreased.

the unsatisfactory nature of these figures is felt to at roll goods and rugs, both of the standard speci- e rarely made in the same mill. The decline of l goods has also been a factor, as has the lack of ns designed for or fitted to show by what amount st per square yard of a rug exceeds the production rd of roll goods of the same type and specifications. how as great variation between carpets and rugs

igures, in so far as available, thus give no basis for percentage by which cost or prices for rugs, either s, exceeds that of roll goods of the same type and neral considerations indicate such a difference an the figures themselves. From such considera- variation would be expected for chenille Ax-

[1] ain velvet are identical fabrics; so also one-frame Brussels and plain tapestry; to each is not clear.

minster,[3] and less variation in the case of velvet and tapestry tha in the case of the other types except chenille.

(B) TARIFF PHRASEOLOGY.

The tariff classification provided for by the act of 1913 for carpet and rugs is to be considered in the light of the analysis which th report has followed. Several points, however, are involved in th phraseology of the tariff paragraphs which have not been touche in the summary immediately preceding. Among them is the fa that 11 out of 25 paragraphs of Schedule K were devoted to carpe ings, and 2 of the remaining 14 paragraphs defined wool and ga the date on which the schedule went into effect. Under the act 1922 carpets and rugs are covered in these paragraphs.

For the fiscal year 1920 imports of carpetings made up only 2 per cent of the value of all articles entered under this schedule. fact, machine-made carpeting, to which the great bulk of the carp paragraphs was devoted, formed a negligible percentage of impo under Schedule K of the act of 1913.

Some terms have become obsolete. They are:

"Moquette," which is the French word for Wilton, and which is n now applied to machine-made products in the United States, thou at one time it was applied to a type of Axminster.

"Saxony," which signifies a wool Wilton.

"Tournay velvet," which is a kind of velvet carpeting.

"All-chain Venetian," and "wool Dutch," products of the ingr type, of no importance to-day.

"Bockings," "covers," and "bed sides," are products of no pr ent importance.

The following groupings, used in the act of 1922, omit obsol terms and bring together or separate the several kinds of floor cov ings which the decisions and the facts show might well be combi or separated, as the case may be:

1. Oriental, Axminster, Savonnerie, Aubusson, and other carpets and rugs, made on a power-driven loom; * * *. (Par. 1116.)

This brings together all handmade carpets and rugs and ad Savonnerie, which is a term applied to a French hand-tufted prod more extensively imported than some of the others hitherto provid for by name.

2. * * * carpets and rugs of oriental weave or weaves, produced on a po driven loom; chenille Axminster carpets and rugs, whether woven as separate car and rugs or in rolls or any width; all the foregoing, plain or figured, * * *. (P 1116.)

This provides for carpets and rugs woven on power looms wh reproduce the oriental weave. Chenille Axminsters are also inclu in this group because they are power-loom products which entai considerable amount of hand work and which carry a high percenta of labor cost.

3. Axminster carpets and rugs, not specially provided for; Wilton carpets and r Brussels carpets and rugs; velvet and tapestry carpets and rugs; and carpets and r of like character or description, * * *. (Par. 1117.)

[3] One manufacturer estimates that the cost of seamless chenille Axminster rugs would exceed th roll goods of corresponding quality by perhaps 9 or 10 per cent.

ping covers all other machine-made wool carpets and ingrains which are of a somewhat different class and, e now usually made in the United States of other mate- ol.

pets and ingrain rugs or art squares, of whatever material composed, rugs of like character or description, not specially provided for, 1117.)

ain carpetings are differentiated in method of manufac- now usually in material from the regular standard wool ted in group 3.

or coverings, including mats and druggets, not specially provided olly or in chief value of wool, * * *. (Par. 1117.)

sket clause that covers not only mats and druggets but r type of wool carpeting that might not properly be any of the groups more specifically described.

ocks, and all other articles composed wholly or in part of carpets or ially provided for, * * *. (Par. 1118.)

rugs are not infrequently used in making other articles. ssocks are mentioned specifically only as an indication this group (par. 1118) which includes all articles, not led, made in whole or in part from carpets or rugs.

(C) SPECIFIC DUTIES.

rugs are provided for at ad valorem rates in the act also the case in the act of 1913; in the preceding two compound duties. A summary of the duties on the carpetings has been presented on preceding pages of

n of specific duties would raise the question of dis- rugs and carpets in a more pronounced form than n duties. Under an ad valorem system the higher sults in the higher duty upon rugs. The compound d 1909 resulted also in a heavier rate for rugs, although han under an ad valorem system.

he acts of 1913, 1909, and 1897 have been applied es of domestic carpeting, as previously presented, duties are computed and presented in the following pose of showing differences in the rates levied upon carpeting by the acts mentioned. In reading the ept in mind that the prices used are domestic, and e high prices of June, 1920. Under high prices the ts of the ad valorem duties or compound duties r for rugs and carpets by a greater amount than —that is, if the prices per square yard of a carpet nd $2, respectively, and the duty 50 per cent, the pecific equivalent of the duty will be $0.50, while h are doubled, the difference between the specific same rate will be $1. Likewise, under high prices, tween the specific equivalents of the compound cts of 1909 and 1897 and the act of 1913 will be greater weight of the ad valorem portion of the

Ad valorem and specific rates of duty on carpets and rugs on the basis of typical prices June, 1920.[1]

[Acts of 1913, 1909, and 1897.]

ROLL GOODS.

Description.	Domestic price per square yard of typical fabric.	Duties.			
		Act of 1913.		Acts of 1909 and 1897.	
		Ad valorem rate (per cent).	Equivalent specific rate per square yard.	Rate.	Equivalent specific rate per square yard.
Brussels:					
5-frame, 240-pitch, 9-wire	$4.11	25	$1.03	44 cents per square yard plus 40 per cent ad valorem.	$2.08
5-frame, 256-pitch, 9-wire	4.60	25	1.15	....do....	2.28
Wilton, worsted:					
6-frame, 256-pitch, 13½-wire	7.80	30	2.34	60 cents per square yard plus 40 per cent ad valorem.	3.72
5-frame, 210-pitch, 9-wire					
Wilton, wool:					
5-frame, 256-pitch, 8½-wire	6.08	30	1.82	60 cents per square yard plus 40 per cent ad valorem.	3.03
236-pitch, 9-wire	6.53	30	1.96	....do....	3.21
No specifications	9.79	30	2.94	....do....	4.52
Tapestry:					
208-pitch, 9.3-wire, 2-shot	2.50	20	.50	28 cents per square yard plus 40 per cent ad valorem.	1.28
200-pitch, 8-wire	2.69	20	.54	....do....	1.36
Velvet:					
190-pitch, 9-wire, 2-shot	3.13	30	.94	40 cents per square yard plus 40 per cent ad valorem.	1.65
180-pitch, 8-wire, 2-shot	3.62	30	1.09	....do....	1.85
196-pitch, 9-wire, 2-shot	6.34	30	1.90	....do....	2.94
Axminster:					
7.2 by 7	3.93	35	1.36	60 cents per square yard plus 40 per cent ad valorem.	2.17
6¾ by 7	4.87	35	1.70	....do....	2.55
No specifications					
Chenille Axminster, 6-row	10.99	35	3.85	60 cents per square yard plus 40 per cent ad valorem.	5.00

SEAMED RUGS (9 by 12).

Brussels:					
5-frame, 240-pitch, 9-wire	$4.78	25	$1.20	44 cents per square yard plus 40 per cent ad valorem.	$2.35
5-frame, 256-pitch, 9-wire	4.75	25	1.19	....do....	2.34
Wilton, worsted:					
6-frame, 256-pitch, 13½-wire	10.83	30	3.25	60 cents per square yard plus 40 per cent ad valorem.	4.93
5-frame, 210-pitch, 9-wire					
Wilton, wool:					
5-frame, 256-pitch, 8½-wire	5.84 6.84	30 30	1.75 2.05	60 cents per square yard plus 40 per cent ad valorem.	2.94 3.34
236-pitch, 9-wire	8.16	30	2.45	....do....	3.86
No specifications	10.72 [2] 13.38	30 30	3.22 4.01	....do....	4.89 5.95
Tapestry:					
208-pitch, 9.3-wire, 2-shot		20		28 cents per square yard plus 40 per cent ad valorem.	
200-pitch, 8-wire		20		....do....	
Velvet:					
190-pitch, 9-wire, 2-shot		30		40 cents per square yard plus 40 per cent ad valorem.	
180-pitch, 8-wire, 2-shot		30		....do....	
196-pitch, 9-wire, 2-shot		30		....do....	
Axminster:					
7.2 by 7		30		10 cents per square foot plus 40 per cent ad valorem.	
6¾ by 7		30		....do....	
No specifications	3.25	30	1.62	....do....	2.19
Chenille Axminster, 6-row					

[1] High prices.

[2] 6 by 9 rug.

ates of duty on carpets and rugs on the basis of typical prices, July, 1920—Continued.

SEAMLESS RUGS (9 by 12).

Domestic price per square yard of typical fabric.	Duties.				
	Act of 1913.		Acts of 1909 and 1897.		
	Ad valorem rate (per cent).	Equivalent specific rate per square yard.	Rate.	Equivalent specific rate per square yard.	Equivalent ad valorem rate (per cent).
.....	25	.....	.....	.....	.....
.....	25	.....	.....	.....	.....
.....	30	.....	.....	.....	.....
$13.20	30	$3.96	60 cents per square yard plus 40 per cent ad valorem.	$5.88	44.55
.....	30	.....	.....	.....	.....
.....	30	.....	.....	.....	.....
.....	30	.....	.....	.....	.....
[1] 13.77	30	4.13	60 cents per square yard plus 40 per cent ad valorem.	6.11	44.37
2.76	20	.55	28 cents per square yard plus 40 per cent ad valorem.	1.38	50.00
2.80	20	.56	.....do.....	1.40	50.00
3.76	30	1.13	40 cents per square yard plus 40 per cent ad valorem.	1.90	50.53
4.03	30	1.20	.....do.....	2.01	49.88
4.97	30	1.49	.....do.....	2.39	48.09
4.72	50	2.36	10 cents per square foot plus 40 per cent ad valorem.	2.79	59.11
4.32	50	2.16	.....do.....	2.63	60.88
3.69	50	1.85	.....do.....	2.38	64.50
11.78	[2] 50	5.89	.....do.....	5.61	47.62
	[2] 35	4.12	60 cents per square yard plus 40 per cent ad valorem.	5.31	45.07

g. [2] At present under litigation.

tes of the act of 1913 were 20, 25, 30, 35, and 50 per
ie type of carpeting. The ad valorem equivalents,
920 domestic prices of the rates charged in the
9 vary little from 50 per cent, alike upon the differ-
ing. The most pronounced variation is in the
ugs, on which the ad valorem part of the duty
high rate also provided for oriental rugs. The
ed to chenille Axminster rugs, but the resulting
nt is below 50 per cent.

types of carpeting the equivalent specific rates
ary as follows: Tapestry, $0.50 to $0.56 per
the rates of the act of 1913, and $1.28 to $1.40
the two preceding acts; velvet, $0.94 to $1.90
the 1913 act, $1.65 and $2.94 under the earlier
3 to $1.20 and $2.08 to $2.35; Axminster, $1.26
to $2.79; Wilton, $1.75 to $4.13 and $2.94 to
Axminster (shown for only one item), $3.85 (roll
mless rugs), and $5 (roll goods) to $5.61 (seam-

The principal object of the table is to compare the equivalent specific rates calculated for rugs and carpets. The percentages by which the specific duties on rugs exceeded those on carpets are presented below:

Percentages by which the equivalent specific rates levied on rugs exceeded those levied on carpets (basis 1920 domestic prices).

	Act of 1913.
Tapestry (seamless rugs over carpets):	*Per cent.*
A	[illegible]
B	4
Velvet (seamless rugs over carpets):	
A	[illegible]
B	[illegible]
C	[1] 22
Brussels (seamed rugs over carpets):	
A	[illegible]
B	3
Axminster:	
A (seamless rugs over carpets)	[illegible]
B (seamless rugs over carpets)	[illegible]
C (seamless over seamed rugs)	[illegible]
Wilton, worsted (seamed rugs over carpets) A	[illegible]
Wilton, wool:	
A (seamed rugs over carpets)	[1] 4
	[illegible]
B (seamed rugs over carpets)	[illegible]
C (seamless rugs over carpets)	[illegible]
C (seamless over seamed rugs)	[illegible]
Wilton, wool (seamless rugs over carpets) A	[illegible]
Chenille Axminster (seamless rugs over carpet) A	[illegible]

[1] [illegible]

Throughout the table it will be seen that the act of 1913 ma[illegible] greater differentiation between carpets and rugs, on the basis of [illegible] prices, than the preceding acts; the percentages shown in [illegible] column of the table are in all cases less than those in the f[illegible] [illegible]

[illegible]

ıld probably be increased if prices of the various
r a number of differing specifications, rather than
pical" fabrics to the extent to which they are in
uch differences suggest the difficulties involved in
f a specific rate per yard on rugs and carpets.
djustment of rate between the forms of carpeting
case of handmade articles, which are imported as
the imports classified as carpets woven whole and
ı articles, though machine-made goods are also in
d. Imports for selected years under the three
preceding table are presented below, showing both
rem and equivalent specific rates. It is to be
e figures given are for import values, not American
the last table.

rooms, and rugs—Imports for consumption, duties, and equivaıd valorem and specific rates for selected years.

ɔf duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Equivalent ad valorem rate.	Equivalent specific rate per square yard.
quare yard plus	*Sq. yds.* 849,463	$3,553,447	$2,185,896	$4.18	*Per ct.* 61.52	$2.57
.....	886,151	3,686,366	2,272,082	4.16	61.64	2.56
.....	833,284	4,048,320	2,369,284	4.86	58.53	2.84
.....	597,177	2,529,772	1,264,886	4.23	50.00	2.12
.....	497,538	2,185,717	1,092,858	4.39	50.00	2.20
.....	645,279	2,939,737	1,469,868	4.56	50.00	2.28
.....	401,407	2,157,850	1,078,925	5.38	50.00	2.69
.....	194,384	968,893	484,447	4.98	50.00	2.49
.....	771,922	6,308,901	3,154,451	8.17	50.00	4.09
.....	857,847	6,790,998	3,395,499	7.91	50.00	3.96
.....	1,264,238	7,079,036	3,540,002	5.60	50.00	2.80
.....	449,467	2,406,306	1,203,153	5.35	50.00	2.70

the fiscal year 1909, under the rates of the act of
ɔquivalent to 61.52 per cent of their value, or at the
ɜquare yard. The years 1911 and 1913 show very
The 50 per cent duty levied by the act of 1913
equivalent to $2.12 per square yard in the fiscal
919 it was $2.49. The fiscal year 1920 shows a jump
nding to the increase in price; the year 1921, a de-
l the year 1922, a decline to $2.80 following the

APPENDICES.

APPENDIX A.

General imports of Class III wool, 1891–1922 (fiscal year ended June 30).

Imported from—	1891	1892	1893	1894	1895	1896	1897	1898	1899	1900	Average, 1891–1900.
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*
United Kingdom	26, 362, 331	13, 918, 484	26, 742, 905	6, 292, 044	26, 425, 437	27, 998, 444	40, 006, 890	23, 431, 925	19, 294, 414	29, 442, 397	23, 991, 527
France	5, 838, 292	4, 787, 178	8, 091, 639	960, 932	7, 167, 171	6, 180, 653	8, 799, 115	3, 171, 081	1, 545, 115	3, 784, 008	5, 032, 519
Germany	449, 508	282, 871	1, 422, 465	233, 400	1, 135, 294	1, 557, 795	2, 379, 654	1, 062, 551	721, 358	2, 187, 717	1, 143, 261
Turkey in Europe	914, 615	1, 398, 357	2, 533, 638	965, 155	1, 927, 036	5, 062, 343	901, 583	624, 798	773, 160	1, 779, 165	1, 687, 985
Russia on the Baltic and White Seas	13, 639, 347	19, 818, 627	16, 575, 721	4, 238, 664	5, 204, 083	4, 469, 051	5, 276, 216	7, 664, 597	3, 842, 249	7, 647, 177	8, 837, 573
Russia on the Black Sea	10, 883, 388	12, 642, 082	14, 259, 512	4, 816, 373	7, 154, 600	5, 471, 933	6, 601, 483	9, 544, 073	9, 462, 352	9, 784, 699	9, 062, 050
China	10, 624, 067	13, 819, 699	20, 744, 689	10, 186, 264	26, 046, 543	24, 537, 480	21, 449, 747	19, 523, 016	14, 264, 551	30, 709, 966	19, 190, 602
Turkey in Asia	5, 629, 559	9, 109, 258	13, 316, 069	3, 894, 324	7, 307, 696	5, 015, 811	6, 497, 111	5, 104, 326	3, 944, 085	6, 080, 214	6, 589, 845
Argentina	12, 641, 642	13, 865, 411	13, 713, 276	8, 981, 887	18, 880, 491	13, 335, 224	14, 374, 841	9, 532, 573	4, 880, 175	9, 466, 942	12, 067, 246
British East Indies	54, 742	568, 605	403, 937	267, 043	883, 936	43, 160	29, 611	390, 181	816, 122	690, 363	414, 770
Chile	945, 250	769, 585	1, 140, 453	1, 052, 821	1, 690, 669	1, 839, 229	1, 678, 897	998, 870	1, 050, 706	864, 047	1, 203, 053
All other countries	1, 422, 949	1, 601, 125	3, 441, 768	1, 029, 677	1, 582, 693	2, 410, 592	4, 146, 309	1, 983, 351	1, 009, 504	3, 456, 234	2, 208, 420
Total	90, 405, 690	92, 581, 282	122, 386, 072	42, 918, 584	105, 405, 649	97, 921, 715	112, 141, 457	83, 081, 342	61, 603, 791	105, 892, 929	91, 428, 851

Imported from—	1901	1902	1903	1904	1905	1906	1907	1908	1909	1910	Average, 1901–1910.
United Kingdom	22, 324, 810	30, 852, 501	37, 160, 932	31, 531, 212	20, 398, 342	16, 620, 343	17, 638, 896	13, 054, 750	31, 103, 417	28, 419, 718	24, 910, 492
France	1, 303, 717	3, 385 166	3, 745, 359	2, 403, 263	4, 016, 700	3, 326, 729	3, 154, 019	1, 598, 044	1, 508, 904	3, 571, 697	2, 801, 360
Germany	2, 026, 451	3, 313, 173	3, 447, 458	1, 531, 864	1, 051, 024	1, 153, 687	1, 820, 750	1, 239, 449	2, 891, 902	2, 075, 311	2, 055, 107
Turkey in Europe	1, 475, 837	1, 277, 303	2, 268, 816	2, 343, 525	4, 454, 640	2, 023, 972	2, 997, 587	2, 155, 635	912, 525	2, 645, 084	2, 255, 492
Russia on the Baltic and White Seas	8, 969, 693	11, 102, 204	14, 191, 776	14, 126, 687	15, 340, 827	.....	.....	.....	.....	.....	.....
Russia on the Black Sea	3, 461, 103	3, 996, 509	7, 984, 011	10, 735, 776	12, 603, 983	.....	.....	.....	.....	.....	.....
Russia in Europe	.....	.....	.....	.....	.....	23, 100, 432	21, 028, 410	15, 325, 802	7, 121, 774	15, 280, 453	18, 436, 944
China	8, 100, 067	18, 579, 442	24, 626, 048	23, 581, 814	27, 644, 294	29, 283, 046	36, 612, 387	18, 137, 991	32, 272, 982	38, 061, 762	25, 689, 983
Turkey in Asia	4, 905, 182	5, 819, 905	6, 848, 295	10, 999, 205	12, 409, 991	11, 172, 790	10, 494, 080	7, 042, 864	7, 017, 879	9, 262, 975	8, 597, 317
Argentina	10, 540, 515	9, 549, 401	10, 736, 402	9, 988, 356	6, 204, 286	5, 747, 772	3, 406, 423	923, 076	6, 672, 175	3, 674, 644	6, 744, 305
British East Indies	991, 631	1, 626, 343	2, 620, 124	2, 661, 793	2, 885, 842	2, 454, 453	3, 831, 444	1, 982, 910	4, 471, 951	6, 396, 012	2, 992, 250
All other countries	3, 318, 760	4, 852, 325	6, 073, 341	5, 329, 203	5, 685, 935	4, 790, 883	9, 210, 055	5, 389, 160	7, 902, 543	11, 333, 363	6, 388, 557
Total	67, 417, 766	94, 354, 272	119, 702, 562	115, 232, 698	112, 695, 864	99, 674, 107	110, 194, 051	66, 849, 681	101, 876, 052	120, 721, 019	100, 871, 807

Argentina	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
British East Indies	2,043,405	4,440,606	3,962,811	2,778,130	859,121	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	3,345,209
Chile	22,953	24,136	16,693	114,173	404,417	3,828,210	3,250,229	5,231,980	16,125,000	4,434,293	13,064,242
All other countries [1]	7,138,944	10,647,312	13,463,861	10,440,409	3,837,242	16,140,005	20,533,599	13,795,606	16,582,390	18,063,044	
Total	85,086,328	106,639,720	111,168,094	102,003,313	65,709,752	109,268,999	67,672,671	58,994,662	84,178,453	72,225,748	86,294,774

Imported from—	July 1 to Dec. 31, 1920.	Calendar years—	
		1921	1922
	Pounds.	*Pounds.*	*Pounds.*
United Kingdom	1,504,666	37,838,591	67,049,193
France	15,176	1,275,190	5,941,528
Germany		968,497	3,459,151
Turkey in Europe	973,248	113,126	1,360,184
Russia in Asia	919,655	10,460	
China	5,435,797	37,182,717	61,533,467
Turkey in Asia	187,138	400,490	1,029,822
Argentina	580,748	10,181,420	10,320,381
British East Indies	124,112	1,373,857	2,922,672
Chile	292,157	85,750	25,275
All other countries	1,051,974	8,470,398	19,394,160
Total	11,084,671	97,900,496	173,035,833

[1] Spain's exports increased from 117 pounds in 1892 to 5,746,933 pounds in 1917.

Imports for consumption of Class 3 (carpet) wools.

FISCAL YEARS.	Wool. Quantity.	Wool. Value.	Wool. Duty.	Camel's hair. Quantity.	Camel's hair. Value.	Camel's hair. Duty.	Total class 3 (carpet) wools. Quantity.	Total class 3 (carpet) wools. Value.	Total class 3 (carpet) wools. Duty.	Actual and computed ad valorem rate.
	Pounds.			*Pounds.*			*Pounds.*			*Per cent.*
1891 [1] (Oct. 6, 1890, to June 30, 1891)	51,722,986	$5,534,214	$1,897,627	1,501,234	$148,565	$47,541	53,224,220	$5,682,779	$1,945,168	34.23
1892	86,534,773	8,437,894	2,786,089	4,025,352	304,560	98,923	90,560,125	8,742,454	2,885,012	33.00
1893	102,514,867	9,986,687	3,285,471	4,380,714	325,550	104,176	106,895,581	10,312,237	3,389,647	32.87
1894	34,759,683	3,270,578	1,055,143	1,770,901	134,295	42,974	36,530,584	3,404,873	1,098,117	32.25
1895 (July 1 to Aug. 27, 1894)	4,714,175	423,467	135,828	102,610	8,336	2,682	4,816,785	431,803	138,510	32.08
Annual average, act of 1890	71,933,871	7,097,950	2,351,235	3,023,905	236,480	76,051	74,957,776	7,334,430	2,427,286	33.09
1895 (Aug. 28, 1894, to June 30, 1895)	136,497,625	12,441,544	.....	[2] 3,173,825	[2] 262,555	.....	139,671,450	12,704,099	.....	.....
1896	96,661,663	9,359,745	.....	[3] 1,459,554	[3] 151,480	.....	98,121,217	9,511,225	.....	.....
1897	109,404,278	11,493,055	.....	[4] 2,410,709	[4] 236,568	.....	111,814,987	11,729,623	.....	.....
1898 (July 1 to July 23, 1897)	5,068,267	460,796	.....	120,046	13,232	.....	[5] 5,188,313	474,028	.....	.....
Annual average, act of 1894	119,477,983	11,601,343	.....	2,462,250	228,154	.....	121,940,233	11,829,497	.....	.....
1898 (July 24, 1897, to June 30, 1898)	42,445,340	4,062,847	1,747,038	712,241	71,580	28,490	43,157,581	4,134,427	1,775,528	42.94
1899	64,619,113	6,117,928	2,609,480	1,025,656	107,151	41,026	65,644,769	6,225,079	2,650,506	42.58
1900	97,650,768	9,042,014	3,774,492	1,319,576	139,137	52,783	98,970,344	9,181,151	3,827,275	41.69
1901	80,725,075	7,557,912	3,267,234	997,868	111,490	40,379	81,722,943	7,669,402	3,307,613	43.13
1902	97,785,011	8,988,307	3,943,476	702,719	72,265	28,109	98,487,730	9,060,572	3,971,585	43.83
1903	117,400,891	11,368,743	4,776,474	1,844,327	186,861	73,773	119,245,218	11,555,604	4,850,247	41.97
1904	105,430,905	11,939,409	4,784,361	2,702,132	303,823	106,115	108,133,037	12,243,232	4,892,476	39.96
1905	110,086,286	13,647,006	5,382,934	2,509,591	295,758	100,607	112,595,877	13,942,764	5,483,541	39.33
1906	107,167,736	14,344,287	5,434,313	2,451,530	327,716	123,460	109,619,266	14,672,003	5,557,773	37.88
1907	90,242,134	13,946,885	4,925,335	2,210,985	328,662	135,916	92,453,119	14,275,547	5,061,251	35.45
1908	62,633,615	8,968,842	3,301,387	1,219,863	171,465	77,723	63,853,478	9,140,307	3,379,110	36.97
1909	87,224,962	9,709,773	3,767,438	4,140,593	523,045	189,087	91,365,555	10,232,818	3,956,525	38.67
1910 [5] (July 1 to Aug. 5, 1909)	11,352,414	1,436,152	542,700	263,304	32,487	12,254	11,615,718	1,468,639	554,954	37.79
Annual average, act of 1897	89,278,321	10,062,013	4,008,573	1,835,830	221,909	84,041	91,114,151	10,283,922	4,092,614	39.80
1910 [5] (Aug. 6, 1909, to June 30, 1910)	103,748,453	13,124,830	4,959,678	2,406,307	296,901	111,983	106,154,760	13,421,731	5,071,661	37.79
1911	92,580,769	12,016,011	4,483,902	3,470,177	517,071	226,091	96,050,946	12,533,082	4,709,993	37.58
1912	109,643,928	14,243,572	5,256,237	3,836,627	609,792	264,271	113,480,555	14,853,364	5,520,508	37.17
1913	92,197,684	12,834,185	4,809,150	3,735,635	621,509	259,614	95,933,319	13,455,694	5,068,764	37.67
1914 (July 1 to Oct. 3, 1913)	20,362,190	2,792,914	1,024,568	760,933	132,555	53,266	21,123,123	2,925,469	1,077,834	36.84
Annual average, act of 1909	100,502,994	13,209,999	4,930,748	3,412,192	522,965	219,774	103,915,186	13,732,964	5,150,522	37.50

Annual average, act of 1913									
Annual average, Oct. 6, 1890, to Sept. 21, 1922, inclusive.	91,393,182	13,409,428	2,437,408	1,992,612	277,342	69,518	[illegible]	[illegible]	

[1] The fiscal year 1891 does not include 32,671,469 pounds, valued at $3,721,689, paying duty amounting to $976,864, which came in under the old law effective July 1, 1883, to Oct. 5, 1890.
[2] Includes 144,227 pounds of "Hair of the goat, alpaca, and other like animals," valued at $30,569 (free).
[3] Includes 210,034 pounds of "Hair of the goat, alpaca, and other like animals," valued at $37,477 (free).
[4] Includes 97,173 pounds of "Hair of the goat, alpaca, and other like animals," valued at $16,360 (free).
[5] A portion of the imports for 1910 were not assignable to either the old or the new tariffs by reason of any difference in rates of duty, and were therefore distributed between the old and the new on the basis of the proportionate days covered by each.

General imports of Class III wool, 1891–1921.

Fiscal year ended June 30—	Quantity.	Value.	Fiscal year ended June 30—	Quantity.	Valu
	Pounds.			*Pounds.*	
1891	90,405,690	$9,759,989	1907	110,194,051	$16,
1892	92,581,282	8,795,681	1908	66,849,681	9,
1893	122,386,072	11,720,863	1909	101,876,052	11,
1894	42,918,584	3,959,204	1910	120,721,019	16,
1895	105,405,649	9,563,238	1911	85,086,328	10
1896	97,921,715	9,493,085	1912	106,630,720	14
1897	112,141,457	11,773,915	1913	111,168,094	15
1898	83,031,342	7,954,482	1914	102,008,313	17
1899	61,603,791	5,786,882	1915	65,709,752	10
1900	105,892,929	9,617,230	1916	109,268,999	22
1901	67,417,766	6,429,986	1917	67,672,671	19
1902	94,354,272	8,712,008	1918	58,994,662	22
1903	119,702,562	11,831,132	1919	84,178,453	3
1904	115,232,696	13,420,275	1920	72,225,748	2
1905	112,695,864	14,943,706	1921	50,378,105	
1906	99,674,107	13,917,414			

APPENDIX B.

Domestic production, carpets and rugs, other than rag, 1899–1919.

[Census of Manufactures, 1914.]

Kind of carpet.	Quantity.					
	1919		1914	1909	1904	
	Pounds.[1]	*Sq. yards.*	*Sq. yards.*	*Sq. yards.*	*Sq. yards.*	*Sq*
Axminster, moquette	36,667,823	14,700,394	15,742,835	15,691,358	8,181,606	
Wilton	16,464,515	4,964,321	5,616,263	5,343,616	2,395,058	[2]
Brussels	2,399,118	903,127	2,698,840	4,436,457	3,024,162	
Tapestry velvet	22,443,519	9,865,798	[2]13,227,819	[2]10,660,170	[2]8,033,288	
Tapestry Brussels	20,205,086	9,996,099	13,614,354	17,078,476	16,108,908	
Ingrain carpets	1,357,793	1,199,714	5,795,807	17,799,762	33,557,951	3
Ingrain art squares	967,122	820,911	3,177,563	6,131,882	7,135,546	
Smyrna rugs	2,658,390	807,741	822,150	1,400,233	3,828,282	
Wool and paper fiber			4,168,954			
Chenille Axminster			178,058			
All other (except rag)	14,899,432	8,914,987	1,297,631	2,676,947	406,042	
Total	118,071,798	52,173,092	66,340,274	81,218,881	82,670,843	7

Kind of carpet.	Value.				
	1919	1914	1909	1904	
Axminster moquette	$35,503,778	$18,578,693	$17,372,706	$8,476,140	$
Wilton	23,461,960	11,929,605	10,119,330	4,710,444	[2]
Brussels	2,233,053	3,995,626	5,550,189	3,898,675	
Tapestry velvet	20,625,610	[2]12,867,635	[2]9,027,193	[2]7,754,681	
Tapestry Brussels	13,120,096	9,852,647	12,999,333	11,464,716	
Ingrain carpets	1,055,242	2,241,294	6,749,672	13,287,302	1
Ingrain art squares	714,648	1,165,087	2,408,960	2,785,457	
Smyrna rugs	1,914,201	870,991	1,660,322	4,134,500	
Wool and paper fiber		1,543,079			
Chenille Axminster		714,798			
All other (except rag)	11,487,390	923,967	1,078,633	349,960	
Total	110,115,978	64,683,322	66,966,338	56,861,775	4

[1] Pounds not reported prior to 1919.

[2] Includes Wilton velvets.

Production of carpets, 1915–1917.[1]

	1915		1916		1917	
	Square yards.	Ratio.	Square yards.	Ratio.	Square yards.	Ratio.
		Per cent.		*Per cent.*		*Per cent.*
.....	14,258,687	27.72	15,090,052	26.7	12,105,163	26.9
.....	5,474,831	10.64	6,368,577	11.3	4,928,066	10.9
.....	2,326,715	4.53	2,109,377	3.7	974,827	2.2
.....	6,310,815	12.28	7,111,274	12.5	5,894,667	13.1
.....	14,996,870	29.16	17,160,523	30.2	12,974,098	28.8
.....	3,492,222	6.79	3,516,126	6.2	2,978,693	6.6
.....	3,055,516	5.94	3,488,905	6.1	3,435,500	7.6
.....	1,077,704	2.10	1,319,483	2.3	1,235,057	2.7
.....	431,725	.84	577,122	1.0	550,485	1.2
.....	51,425,085	100.00	56,741,439	100.0	45,076,556	100.0

War Commodities: 1918. Production in that census was given in linear yards. into square yards on the assumption that all carpetings were reported as of in, in which branch the 36-inch width is universal. Some inaccuracy unecially with regard to Axminster and Smyrna figures, since in the chenille les it is customary to deal on the square-yard basis, and it is uncertain in just irers of these goods converted their productions to "linear yard" basis.

c production by several forms of manufacture, 1919 and 1914.

[Census of Manufactures.]

	1919			1914		
	Carpets or roll goods.	Seamed rugs.	Seamless rugs.	Carpets or roll goods.	Seamed rugs.	Seamless rugs.
	Sq. yards.	*Sq. yards.*	*Sq. yards.*	*Sq. yards.*	*Sq. yards.*	*Sq. yards.*
....	2,024,291	7,209,480	5,466,623	1,451,752	9,637,852	4,653,231
.....	1,227,816	2,954,691	781,814	1,900,948	3,574,464	140,851
.....	148,686	744,160	10,281	693,827	2,000,819	4,194
.....	4,376,196	1,292,488	4,197,114	4,856,066	2,913,657	5,458,096
.....	2,000,294	116,988	7,878,817	2,612,947	2,727,734	8,273,673
.....	1,199,714	.....	820,911	5,795,807	.....	3,177,563
.....	.....	.....	807,741	.....	.....	822,150
.....	.....	.....	6,828,638	.....	.....	4,168,954
.....	.....	.....	310,181	.....	.....	178,058
.....	989,212	154,573	338,442	.....	.....	1,297,631

ials used in the carpet and rug industry, 1899–1919.

[Census of Manufactures.]

	Quantity.				
	1919	1914	1909	1904	1899
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*
.....	36,261,904	52,552,449	64,135,020	51,320,521	51,871,334
.....	21,905,916	39,218,831	51,474,353	31,551,895	37,560,231
.....	6,272,522	3,469,283	5,400,944	6,805,802	6,189,757
.....	3,864,826	3,802,789	5,147,130	1,997,369	1,943,942
.....	560,664	3,419,715	2,732,034	2,172,481	2,325,054
1.....	[1] 46,959,916	[1] 63,244,236	[1] 77,415,128	[1] 93,848,068	[1] 62,330,087
.....	17,389,590	21,626,360	25,718,747	32,431,400	32,996,316
.....	4,164,565	9,267,278	11,292,749	11,355,993	9,218,267
.....	17,309,949	24,619,137	26,166,241	27,421,831	19,823,561
.....	2,280,055	7,602,200	8,792,876	8,228,200	8,388,211

dent omitted from total.

Materials used in the carpet and rug industry, 1899–1919—Continued.

Material.	Quantity.				
	1919	1914	1909	1904	1899
Yarns purchased—Continued.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*
Jute, vegetable fibers	45,119,812	59,148,266	55,592,343	49,119,558	38,846,41
Other	921,655	341,114	781,028	1,112,138	426,38
Total yarns purchased	87,125,626	122,604,355	128,343,984	129,669,120	109,699,15
Total materials	134,139,542	185,848,591	205,759,112	191,965,293	172,029,2
	Value.				
Wool	$13,258,069	$10,493,743	$11,752,396	$10,431,146	$8,104,
Animal hair	1,847,332	402,225	474,057	593,588	549,
Cotton	1,426,110	343,916	533,302	251,112	129,
Waste and noils	130,290	476,610	513,392	341,309	305,
Total raw material	16,661,801	11,716,494	13,273,147	11,617,155	9,088,
Yarns purchased:					
Woolen	11,337,800	5,821,848	5,036,118	6,648,001	5,030,
Worsted	4,479,898	4,592,906	5,588,915	5,405,072	3,544,
Cotton	8,972,737	4,637,673	4,772,594	4,757,850	2,744,
Linen	1,062,197	1,414,924	1,606,009	1,355,892	1,164,
Jute, vegetable fibers	9,399,764	6,040,186	3,928,694	3,404,516	2,476,
Other	1,788,833	658,254	408,121	339,285	332,
Total yarns purchased	37,041,229	23,165,791	21,338,451	21,910,616	15,293,
Chemicals, dyestuffs	2,917,202	1,378,509	1,729,492	1,467,476	1,151,
All other materials	.....	6,019,429	3,221,914	2,952,707	1,694,
Total	2,917,202	7,397,938	4,951,406	4,420,183	2,845,
Total materials	56,620,232	42,280,223	39,563,004	37,947,954	27,228,

Quantities of wool and other yarns consumed in domestic carpet industry.

Yarn.	1919			1914		
	Manufactured.	Purchased.	Total.	Manufactured.	Purchased.	Tota
	Pounds.	*Pounds.*	*Pounds.*	*Pounds.*	*Pounds.*	*Pound*
Woolen	28,121,404	17,389,590	25,510,994	35,615,821	21,626,360	57,242
Worsted	5,602,211	4,164,565	9,766,776	10,253,791	9,267,278	19,521
Cotton	155,255	17,309,949	17,465,204	2,068,435	24,619,137	26,687
Jute	1,393,285	45,119,812	46,513,097	.....	59,148,266	59,148
Linen	.....	2,280,055	2,280,055	.....	7,602,200	7,602
Other	.....	921,655	921,655	.....	341,114	341
Total	.....	.....	102,457,781	.....	.....	170,542

Yarn.	1909		
	Manufactured.	Purchased.	Tota
	Pounds.	*Pounds.*	*Poun*
Woolen	37,184,277	25,718,747	62,903
Worsted	94,093,571	11,292,749	25,386
Cotton	3,023,102	26,166,241	29,189
Jute	.....	55,592,343	55,592
Linen	.....	8,792,876	8,792
Other	.....	781,028	78
Total	.....	.....	182,64

APPENDIX C.

ıge earners, and products, carpet and rug industry,[1] 1869–1919.

Capital.			Per cent increase.	Wage earners.			
Value.	Per cent increase.	Average per mill.		Number.	Per cent increase.	Average per establishment.	Per cent increase.
$12,540,750	.....	$58,329	.....	12,098	.....	56	.....
21,468,587	71.19	110,095	88.75	20,371	68.38	104	85.74
38,208,842	77.98	220,860	100.61	28,736	41.06	166	59.61
44,449,299	16.33	334,205	51.32	28,411	−1.13	214	28.92
56,781,074	27.74	408,497	22.23	33,221	16.93	239	16.82
75,627,010	33.19	544,079	33.19	33,307	.26	240	.42
85,153,828	12.60	877,874	61.35	31,309	−6.00	323	34.58
119,196,461	40.00	1,589,286	81.03	22,933	−26.76	306	−4.97

ue added by manufacture.				Materials.			
	Per cent increase.	Average per establishment.	Per cent increase.	Value.	Per cent increase.	Average per establishment.	Per cent increase.
580	.....	$38,063	.....	$13,577,993	.....	$63,153	.....
925	56.51	65,682	72.56	18,984,877	39.82	97,358	54.16
288	49.32	110,551	68.31	28,644,905	50.88	165,577	70.07
632	9.61	157,621	42.58	27,228,719	−4.94	204,727	23.64
479	12.76	170,061	7.89	37,947,954	39.37	273,007	33.35
148	33.80	227,541	33.80	39,563,004	4.26	286,626	4.99
962	−15.11	276,783	21.64	41,265,286	4.30	425,415	48.42
789	109.08	748,477	170.42	65,390,376	58.46	871,871	104.94

50, Census of Wool Manufactures: 1909, and from Census of Wool Manufactures:

e earners, and products, according to "value of products," 1904, 1909, 1914,[1] and 1919.

ESTABLISHMENTS.

ng—	1919	1914	1909	1904	Percentage of total.			
					1919	1914	1909	1904
.....	2	.....	12	6	2.67	.....	8.63	4.32
.....	3	8	12	6	4.00	8.25	8.63	4.32
.....	7	25	43	46	9.33	25.77	30.94	33.09
.....	36	49	56	65	48.00	50.52	40.29	46.76
.....	27	15	16	16	36.00	15.46	11.51	11.51
.....	75	97	139	139	100.00	100.00	100.00	100.00

AVERAGE NUMBER OF WAGE EARNERS.

ıng—	1919	1914	1909	1904	Percentage of total.			
					1919	1914	1909	1904
.....	1	0	15	(2)	.....	0.00	0.05	(2)
.....	9	71	83	(2)	0.04	.23	.25	(2)
.....	94	622	1,027	(2)	.41	.23	.25	(2)
.....	2,938	7,326	8,070	(2)	12.81	23.40	24.23	(2)
.....	19,891	23,290	24,112	(2)	86.74	74.38	72.39	(2)
.....	22,933	31,309	33,307	(2)	100.00	100.00	100.00	(2)

, Census of Wool Manufactures: 1914. [2] Not reported.

Establishments, wage earners, and products, according to "value of products," 1904, 1909, 1914, and 1919—Continued.

VALUE OF PRODUCTS.

Establishments producing—	1919	1914	1909	1904	Percentage of total.			
					1919	1914	1909	1904
Less than $5,000	4,610	.....	$30,390	$15,398	0.01	.....	0.04	0.
$5,000 to $20,000	38,950	$104,006	134,346	61,527	.03	0.15	.19	.
$20,000 to $100,000	454,571	1,662,234	2,217,254	2,717,194	.37	2.40	3.11	4.
$100,000 to $1,000,000	16,062,334	18,443,847	17,772,495	20,101,544	13.03	26.08	24.97	32.
Over $1,000,000	106,693,363	48,918,098	51,033,667	38,690,770	86.56	70.00	71.69	62.
Total	123,253,828	69,128,185	71,188,152	61,586,433	100.00	100.00	100.00	100.

VALUE ADDED BY MANUFACTURE.[3]

Establishments producing—	1919	1914	1909	Percentage of total.		
				1919	1914	190
Less than $5,000	3,211	.....	$14,460	0.01	.....	
$5,000 to $20,000	16,604	$56,953	78,683	.03	0.21	
$20,000 to $100,000	197,408	629,727	1,020,520	.35	2.35	
$100,000 to $1,000,000	6,295,516	6,870,993	7,393,144	11.21	25.59	2
Over $1,000,000	49,623,060	19,290,289	23,118,041	88.40	71.85	7
Total	56,135,789	26,847,962	31,625,148	100.00	100.00	10

[3] 1904 not reported.

APPENDIX D.

Number of looms listed in the carpet and rug industry, by States, 1909,[1] 1914,[2] and 19

Kind of carpet.	Census year.	United States.	Connecticut.	Indiana.	Massachusetts.	New Jersey.	New York.	Pennsylvania.	A oth
Ingrain	1909	3,705	105	.....	484	62	131	2,888	
	1914	1,820	47	11	170	.....	105	1,487	
	1919	1,326	.....	.....	268	42	69	947	
Tapestry and velvet	1909	1,664	67	.....	24	117	772	683	
	1914	2,590	241	.....	170	46	938	1,195	
	1919	2,323	207	.....	55	31	895	1,135	
Brussels and Wilton	1909	2,670	244	.....	926	109	581	806	
	1914	2,071	127	.....	764	94	334	752	
	1919	1,619	158	.....	340	24	333	764	
Axminster	1909	2,562	365	.....	340	26	1,433	398	
	1914	2,730	336	.....	370	69	1,522	433	
	1919	2,145	171	.....	173	77	1,365	359	
Smyrna	1909	1,021	.....	.....	.....	114	306	591	
	1914	498	.....	.....	.....	8	175	315	
	1919	413	.....	.....	.....	.....	248	104	
Venetian	1909	19	.....	.....	.....	.....	.....	.....	
	1914	.....	.....	.....	.....	.....	.....	.....	
	1919	.....	.....	.....	.....	.....	.....	.....	
Total	1909	[4] 11,641	.....	.....	.....	.....	.....	.....	
	1914	[4] 9,709	.....	.....	.....	.....	.....	.....	
	1919	[4] 7,897	.....	.....	.....	.....	.....	.....	

[1] Census of Manufactures: 1909, Table 74, p. 130.
[2] Census of Manufactures: 1914, Table 51, p. 78.
[3] Census of Manufactures: 1919, Table 49.
[4] Excludes Colonial or rag carpet and rug looms

ıd rug looms, by types of carpeting, 1899–1919.

actures; Census of 1914; War Census of 1918; and Census of 1919.]

	1899	1904	1909	1914	1918	1919
.....	[1] 4,526	[1] 4,362	[1] 2,929	1,251	858	631
.....	[1] 247	[1] 454	[1] 795	569	496	695
.....	[1] 2,313	[1] 1,694	[1] 1,021	[1] 498	[2] 942	413
.....	.....	.....	.....	1,281	1,561	1,209
.....	1,834	2,490	2,680	1,309	1,199	1,114
.....	544	549	636	550	442	394
.....	529	710	1,018	1,521	1,727	1,225
.....	761	1,433	2,562	[2] 2,730	2,428	2,145

ɔet.	1899	1904	1909	1914	1919
.....	92	85	27	.....	11
.....	1	42	7	.....	.....
.....	955	563	57	11	.....

[1] Probably includes Chenille Axminster looms.

ɔn of carpet and rug looms, 1899–1919.

s.	Wilton.		Tapestry.		Velvet.	
Rug.	Carpet.	Rug.	Carpet.	Rug.	Carpet.	Rug.
.....	507	22	1,094	[1] 3	737	([2])
.....	639	71	1,207	[1] 236	1,047	([2])
.....	956	62	1,016	[1] 526	1,138	([2])
2	1,357	134	719	562	927	382
47	262	963	982	227	835	279

ooms. [1] Included with tapestry looms.

idle looms in wool manufacture, 1913–1922.

Association of Wool Manufacturers, December, 1913, to October, 1918.
ɔd States Census Bureau, November, 1918, to date.[1]]

ɔoms.			Looms.		
ıder nches eed ace.	Carpets and rugs.	Date.	Wider than 50 inches reed space.	Under 50 inches reed space.	Carpets and rugs.
27.2	32.1	June 1, 1918.....	8.6	11.9	33.2
17.7	24.5	Sept. 2, 1918.....	13.8	15.1	36.8
25	28.3	Dec. 2, 1918.....	22.5	24.9	58
17.3	38.3	Mar. 1, 1919.....	58.1	42.4	61.4
30	48.9	June 2, 1919.....	29.6	26.6	44.5
32	45.8	Sept. 2, 1919.....	19.9	22.8	37.2
25.9	24.5	Dec. 1, 1919	13.9	19.1	33.5
31.2	24	Mar. 1, 1920.....	14.9	19.8	27.7
20.2	19.6	June 1, 1920.....	26.8	22.4	29.1
7.7	17.1	Sept. 1, 1920.....	51.8	34.8	35.7
6.7	17.6	Dec. 1, 1920.....	51.2	44.8	40.1
10.6	26	Mar. 1, 1921.....	43.1	41.7	60.5
9.4	19.7	June 1, 1921.....	20.5	25.2	53
7.9	16.1	Sept. 1, 1921.....	22	28.4	39.7
11.3	17.7	Dec. 1, 1921.....	26.6	21.7	26.1
15.1	29.6	Mar. 1, 1922.....	31.5	27.1	21.2
9.5	31.3	June 1, 1922.....	37.3	35.3	22.1
8	31	Sept. 1, 1922.....	27.6	23.6	18

ted States Census in computing percentages of idle machinery is slightly
/ by the National Association of Wool Manufacturers.

APPENDIX E.

Division of employees in the domestic carpet manufacture into groups of men, wom and children: 1860–1919.

Year.	Men.	Women.	Children.	Tot
1860	3,910	2,771	.....	
1870	6,808	4,316	874	
1880	10,104	8,570	1,697	
1890	13,655	13,076	2,005	
1900	13,860	12,468	2,083	
1905	16,930	14,408	1,883	
1910	18,720	13,236	1,351	
1915	18,063	12,598	648	
1919	16,573	9,739	690	

Division of employees in carpet mills by occupations, age, and sex, 1909.

[Census of Manufactures, 1910, Vol. IV, p. 380.]

Occupation.	Male.	Female.	Both
Proprietors and officials	708	21	
Managers, overseers, etc.	1,057	79	
Clerical, including designing	1,541	456	
General—Engineers, carpenters, teamsters, etc.	1,582	.....	
Preparatory and spinning	1,686	1,945	
Wool sorters	79	27	
Pickers	154	438	
Carders	270	48	
Dryers	143	28	
Spinners	567	837	
Section hands	38	25	
Bobbin boys, doffers, and carriers	315	267	
Doublers and twisters	120	275	
Intermediate processes	2,669	4,415	
Beamers, warpers, and slashers	274	69	
Drawers-in and threaders	27	208	
Creelers	449	19	
Winders, reelers, and spoolers	262	2,418	
Setters	110	1,527	
Color mixers	133	22	
Dyers	641	29	
Printers	773	123	
Weaving	9,014	4,460	
Loom fixers	531	.....	
Weavers	8,483	4,460	
Finishing	1,280	1,721	
Shearers	99	8	
Cutters	274	51	
Sewers	298	866	
Burlers	11	432	
Finishers	412	294	
Inspectors	74	68	
Packers	112	2	
General workers	5,956	1,691	
Apprentices	86	8	
Cleaners and washers	188	21	
Helpers	248	119	
Laborers	3,391	297	
Machine hands (not specified)	107	114	
Other specified occupations	910	479	
Not specified occupations	1,026	653	
Total	25,493	14,788	

ted States by agreement between a manufacturer and weavers for weaving Wiltons.[1]

[Dollars per yard.]

pecifications.	3/4 loom.	4/4 loom.
	$0.2945	$0.3925
	.3113	.4150
	.3460	.4613
ts:		
	.2629	.3504
	.2778	.3704
	.3088	.4117
	.2839	.3786
	.2945	.3925
0.0105 per yard extra.)		
(better quality), 10-wire, 2-shot	.4207	.5608
ets (better quality), 10-wire, 2-shot	.4207	.5608
ted carpet, A:		
	.3576	.4768
	.4758	.6344
ted carpet, B:		
	.1876	.2501
	.2055	.2740
	.2278	.3037
	.2419	.3224
	.2680	.3572
ot	.3734	.4977
sted carpet, A:		
	.2997	.3997
	.3102	.4135
	.4628	.6170
	.4312	.5749
	.5469	.7291
hot	.5154	.6872
quality), 2-shot	.7362	.9815
		6/4 loom.
sted carpets, B:		
		.4838
		.5360
		.4417
		.4943
		4/4 loom.
igs, 9-wire, 2-shot	.2997	.3997
		.2471
		.2787
, 2-shot		.2865
2-shot		.2865
		6/4 loom.
		.4177
		5/4 and 6/4 looms.
		.3839
		4/4 loom.
		.3224
		.2103
		.2368
		.2436
		.2436
		.3039
ne-half cent extra for linen filling).		
t extra for linen filling)		[2].2156
		.2398
4/4		2.7348
		5.4696
		3.7866
		1.0518
fer, extra	[3]10	[3]13½
, extra	[3]5	[3]6¾
ng gears, 1 hour.		
day work creeling is paid	.1262	.1682
paid, boys' pay.		
paid for rugs or roll work, per climb		.0625
imes		.2103
		.3155

een substituted for trade names. [2] Plus 0.0105. [3] Hours.

Wage scale in force in the United States by agreement between a manufacturer and weav
for weaving Wiltons—Continued.

[Dollars per yard.]

Specifications.	3/4 loom.	4/4 loom
Changing cards for single rug orders, half for each set changed.		
Drop-lea to be paid for as yardage.		
All cutouts or smashes to be paid hour work.		
Grinding and setting up a new set of wires, per wire		$0.0
Setting up a new set where grinding is done other than by weaver		.0
Overtime when permitted according to rules, extra per hour		.4
If a weaver has any bad material in the loom and is told to go on weaving by the superintendent, if not making wages equal to regular hour pay, his pay shall be made up to recompense him at hour pay.		
Harness work shall be paid at day work rate.		
All sample work to be paid per yard extra on all grades		.(
Putting in new creels, 1 hour for each creel.		
Slip weaving: When colors are in the loom, allow 1 hour for 18-inch slip and changing cards. Additional slips, one-half hour each, including change of cards. Slips over one-half yard will be paid as yardage.		
Altering on 2/4 looms will be paid not less than one-half frame for small number of bobbins.		
Putting in name or trade-mark shall be paid 1 hour.		
Putting leathers on frames, hour work.		
When a weaver goes on a loom which has been standing for some time and any or all yarn has been taken out of the loom, he shall be paid full price for altering.		
5 small rugs of any size shall be called an order, and shall not call for payment for the changing of cards.		
2-4-6 by 7-6 rugs also as the above.		
Putting in the warp equals one frame of altering.		
Changing the cylinders to be paid 1 hour.		
Putting on false reed, each time 1 hour.		
Changing fine chain on reed	[3] 1	
Cutting down and drawing up odd courses to be paid for at the rate of 8 courses the hour, but not less than 1 hour to be paid.		
Margins: Owing to varying conditions, the payment for marging will be left to each local making same.		
All hour work to be paid, per hour		.
Experimental work to be paid, per hour		.
Fixers: The minimum wage of the fixers shall be, per week		58.
Hours: The working hours shall be 48 hours per week.		
Alterations:		
Altering up to 256-pitch	$0.8414	1.
Chintz frames, 4 or more colors	1.1149	1.
344-pitch	1.4305	1.
Chintz, 4 or more colors	1.9072	2.
Drawing up frame equals 1 frame altering.		
Breaking in frame without boy equals 1 frame altering.		
Tying through frame equals one-half frame for each frame tied through.		
Small alterations:		
Up to 45 bobbins	[4] ¾	
46 to 90 bobbins	[4] ⅞	
91 to 135 bobbins	[4] 1	
Over 135 bobbins	[4] 1	
Up to 60 bobbins		
61 to 120 bobbins		
121 to 180 bobbins		
Over 180 bobbins		
Chains and reeds:		
Fine chain	.6311	.
Single jute stuffer	.6311	.
Double jute stuffer	.8414	1.
3-ply jute stuffer	1.1570	1.
When stuffer works inside of loom add one-third above prices.		
Fine chains D type Dobcross looms to be paid one-third more.		
Tying in beam without boy, when ordered by foreman, equals 2 beams.		
Taking out beam, including lace, equals one-half hour.		
When lace has to be picked, half hour extra.		
Changing footwork	2.1057	2.
Drawing reed	.8414	1.
Piecing back:		
344-pitch (one quality), up to 3 yards	2.1057	2.
For each yard or fraction over 3 yards	.4207	
344-pitch (second quality), up to 3 yards	1.8853	2.
For each yard or fraction over 3 yards	.4207	
All Wiltons up to 256-pitch, including wool up to 3 yards	1.6519	1.
For each yard or fraction over 3 yards	.2882	
Brussels up to 4½ yards	1.6518	1.
For each yard or fraction thereof over 4½ yards	.2185	
Planted frames, consisting of 4 or more colors or over, to be paid one-third or over above prices in their respective grades.		

[3] Hours. [4] Frame.

Trades Protective and Provident Association—Glasgow Branch.

PRICE LIST—JULY, 1914.

ifications.	Wages per yard.		
	Pence.	Cents.[1]	Plus bonus (140 per cent). Cents.
uffer):			
	2½	4.56	10.94
	2⅝	4.82	11.57
	2¾	5.07	12.17
	2⅞	5.58	13.39
	2⅞	5.83	13.99
	3¼	6.59	15.82
it stuffer):			
	2⅜	4.31	10.34
	2½	4.56	10.94
	2⅝	4.82	11.57
	2⅞	5.32	12.77
	2⅞	5.58	13.39
	3¼	6.34	15.22
h	3	6.08	14.59
ide), 2-shot	3½	6.84	16.42
ls, to be paid the same rate as Saxony).			
ie loom):			
r	3⅞	7.86	18.86
	3⅞	7.86	18.86
	5	10.14	24.34
	5	10.14	24.34
r inch	3⅛	6.34	15.22
s per inch	3	6.08	14.59
aid for in proportion to above rates, but o be made if a less number than 10 wires are used.			
	4¼	8.62	20.69
ire	4½	9.12	21.89
re	4⅝	9.38	22.51
e	4⅝	9.63	23.11
h and Corona wire, 260-pitch 9 cents) per hour.)	5	10.14	24.34
:			
wire	3⅞	7.86	18.86
	4	8.11	19.46
net	4¼	8.62	20.69
alf inch wire	4½	9.12	21.89
	4¼	8.62	20.69
ronet wire	4⅝	9.38	22.51
rona wire	4¾	9.63	23.11
wires per inch, 2-shot	4	.....	.....
Sandringham (¾ wide):			
wire	3⅞	7.86	18.86
	4	8.11	19.46
onet	4¼	8.62	20.69
half inch wire	4½	9.12	21.89
Sandringham (¾ wide):			
wire	3⅜	6.34	15.22
	3½	6.59	15.82
onet	3¾	7.10	17.04
half-inch wire	3¾	7.60	18.24
:			
	4¼	8.62	20.69
wire	4½	9.12	21.89
wire	4⅝	9.38	22.51
ire	4¾	9.63	23.11
nd one-half-inch wire, 260-pitch 9 cents) per hour.)	5	10.14	24.34
):			
	3⅜	6.84	16.42
wire	3⅝	7.35	17.64
wire	3¾	7.60	18.24

al list.

Scotch Power Loom Carpet Trades Protective and Provident Association—Glasgow Branch—Continued.

PRICE LIST—JULY, 1914—Continued.

Specifications.	Wages per yard.		
	Pence.	Cents.	Plus bonus (140 per cent). Cents.
2-shot plain Saxony (¾ wide)—Continued.			
9 wires per inch, Corona wire	3½	7.86	18.86
9 wires per inch, Corona and one-half-inch wire, 260-pitch	4½	8.36	20.06
(Time work, 7d. (14.19 cents) per hour.)			
NOTE.—Should these qualities be made on loom without harness, ½d. (0.25 cents) per yard to be deducted from above prices, either 2 or 3 shot. Should above qualities be done in 4/4 loom, the proper proportion of above rates and 1½d. (2.28 cents) per yard to be added, and should more than 2 frames of dead be used, ½d. (0.25 cents) per frame per yard will be paid in addition to above rates.			
ALTERATIONS.			
Reslaying, 3/4 wide	9	18.25	43.80
Reslaying, 4/4 wide	12	24.33	58.39
Tying in chain, 2/4 wide	4½	9.12	21.89
Tying in chain, 5/8 wide	5	10.14	24.34
Tying in chain, 3/4 wide	6	12.17	29.21
Tying in chain, 4/4 wide	8	16.22	38.93
Tying in stuffer, 2/4 wide, single	6	12.17	29.21
Tying in stuffer, 5/8 wide, single	6	12.17	29.21
Tying in stuffer, 3/4 wide, single	6	12.17	29.21
Tying in stuffer, 3/4 wide, double	8	16.22	38.93
Tying Veronese stuffer, 3/4 wide	12	24.33	58.39
Tying Veronese stuffer, 4/4 wide	16	32.44	77.86
Tying in stuffer, 3/4 wide, 3-fold	12	24.33	58.39
Tying in stuffer, 4/4 wide, single	8	16.22	38.93
Tying in stuffer, 4/4 wide, double	10	20.28	48.67
Putting in new gear (per shaft)	9	18.25	43.80
Drawing in double or single stuffer or tying to a frame, 260-pitch	13	26.36	63.26
Drawing in double or single stuffer or tying to a frame, 240-pitch	12	24.33	58.39
Taking off Wilton slips up to one-half yard	2	4.06	9.74
Weaving Brussels slips on pieces	½	1.01	2.42
Weaving Templeton's name	1	2.03	4.87
Weaving other name	1½	3.04	7.30
Weaving plant	1½	3.04	7.30
Putting on sets of cards on existing frames, after order, to be paid	2	4.06	9.74
Sets of cards or part of a set	2	4.06	9.74
Packing cylinder (1 hour)	7	14.19	.....
Taking out and attending to back-going yarn in gaul of 2–13 inch Veronese, 1 hour at	7	14.19	.....
Breaking down from 3/4 to 2/4, 2 hours at	7	14.19	.....
Breaking down from 3/4 to 5/8, 1 hour at	7	14.19	.....
Breaking down from 5/8 to 2/4, 1 hour at	7	14.19	.....
Short lengths made with piecing back bobbins to be paid time, per hour	7	14.19	.....
New pattern weaving to be paid time, per hour	7	14.19	.....
Trials to be paid at a minimum of 80 ends.			
Tying up harness to be paid time rate, per hour	7	14.19	.....
(Piecework to begin when drawing up and filling in.)			
Cutting out stuffer	6	12.17	29.21
Drawing in bump frame and putting same round wire	6	12.17	29.21
Drawing up frame, 260 bobbins	13	26.36	63.26
Drawing up frame, 240 bobbins	12	24.33	58.39
Drawing up from 2/4 to 5/8	33	66.91	160.58
Drawing up from 5/8 to 3/4	33	66.91	160.58
Drawing up from 2/4 to 3/4	45	91.25	219.00
Drawing in Veronese stuffer	6	12.17	29.21
Changing frame of 260 bobbins	13	26.36	63.26
Changing frame of 240 bobbins	12	24.33	58.39
Changing chintz frame, 260 bobbins	16	32.44	77.86
Working frame down and putting in deads to finish order (per frame)	13	26.36	63.26
Weeding out from 260 to 240	6	12.17	29.21
Weeding out from 260 to 220	7	14.19	34.06
Weeding out from 174 to 148	5	10.14	24.34
Drawing up from 240 to 260	30	60.83	145.99
Drawing up from 220 to 260	36	73.00	175.20
Drawing up from 148 to 174	27	54.75	131.40
Drawing up from 148 to 220	36	73.00	175.20
Drawing up from 148 to 260	63	127.75	306.60

Trades Protective and Provident Association—Glasgow Branch—Continued.

CE LIST—JULY, 1914—Continued.

ications.	Wages per yard.		
	Pence.	Cents.	Plus bonus (140 per cent). Cents.
s—continued.			
ork, per hour	7	14.19	.....
	51	103.41	248.18
ing in one or both chains and fetching out wires in any kind of Wilton 6d. l.			
G BACK.			
	13	26.36	63.26
art of a yard, of carpet	3	6.08	14.59
	16	32.44	77.86
art of a yard, of carpet	4	8.11	19.46
s additional	3	6.08	14.59
E-WORK.			
	60	121.66	291.98
	60	121.66	291.98
	60	121.66	291.98
cents) per hour.			
oy, per hour	4½	9.12	.....
, per hour	1½	3.04	.....
	3	6.08	.....
r	3	6.08	.....
	120	243.32	.....
ot exceed 50 yards either in 2-shot or nd all alterations to be done on time			
	7½	15.20	.....

y worsted goods 1½d. (2.28 cents) per yard is the proportion from 3/4 to ham, Kluta, or Saxony, or any other fabrics, the additional proportion . (2.28 cents) per yard.

RUGS.

nplete rug, or when weaving to center and back, $\frac{3}{16}$d. (0.38 to piece rates to be paid, but when cards have to be turned nal cards have to be put in, or when over 6 feet in length,

ecifications.	Wages per yard.		
	Pence.	Cents.[1]	Plus[1] bonus (140 per cent). Cents.
SQUARES.			
h	2½	5.07	12.17
is have to be cut out or tied in, or turned times (i. e., when the repeat is less than h)	4	8.11	19.46
breadth)	4	8.11	19.46
ing the use of entirely different sets of single carpet, even though it be the same			
here cards have to be turned over, per	1½	3.04	7.30

list.

Weavers working without assistant shall be paid at the rate of 10d. (20.28 cents) per day, in addition to their other earnings.

(1) In the case of a new fabric being introduced the price proposed for weaving same to be submitted to the branch secretary, who shall place same before the members, with a view to coming to an amicable arrangement, but should the price offered be considered inadequate, a conference to be held between the employers and the men's representatives with a view to a mutual agreement.

(2) If a weaver, owing to indifferent material being used, be unable to produce his average yardage, he shall report to branch secretary within 24 hours from start of job, who shall then consult the foreman with a view to the following agreement being put into operation, that the weaver's wage be made up to his average for the preceding year, thus, by taking the two weeks previous and the two weeks after the date of putting in said job.

On behalf of—

J. & J. S. TEMPLETON.
Per A. S. L. YOUNG.

On behalf of the Glasgow Branch of the Scotch Power-Loom Carpet Trades Protective and Provident Association—

THOS. ROWAN, *President.*
HENRY MILLS, *Secretary.*

APPENDIX F.

Exports of wool carpets from United States, 1890–1910.[1]

Year.	Exported to—									
	British Australia.		Canada.		Mexico.		United Kingdom.		All countries.	
	Yards.	Value.	Yards.	Value.	Yards.	Value.	Yards.	Value.	Yards.	Value.
1890	.....	.....	2,273	$1,003	336	$250	458	$409	9,341	$6,702
1891	10	$10	19,840	12,449	1,491	1,431	947	1,145	26,711	18,475
1892	.....	.....	5,483	3,247	481	420	1,684	1,717	11,440	9,378
1893	15	13	13,254	6,666	501	528	1,034	920	18,631	11,510
1894	1,123	983	12,116	9,333	2,404	2,460	265,807	232,216	287,188	250,006
1895	180	160	32,281	17,101	3,710	1,752	204,648	125,926	257,645	161,006
1896	3,952	2,088	39,074	18,957	2,114	1,598	248,067	161,796	342,468	225,207
1897	9,362	5,889	55,207	31,039	2,600	1,708	150,660	128,544	247,213	189,579
1898	4,117	3,654	43,055	26,432	7,581	5,053	124,357	116,928	192,891	164,274
1899	1,351	775	21,348	16,195	9,265	5,551	64,753	50,021	107,779	81,138
1900	26,830	15,842	8,242	6,331	3,716	2,954	94,432	76,475	146,113	115,052
1901	35,436	23,072	3,484	2,317	12,812	7,253	64,750	62,337	127,337	105,156
1902	24,694	16,480	4,343	3,685	30,630	18,227	36,974	34,491	115,600	86,771
1903	17,358	11,622	7,911	6,765	11,254	8,413	18,174	18,064	69,337	57,979
1904	6,848	5,883	4,099	3,883	13,514	9,056	21,179	20,219	60,723	50,921
1905	21,613	16,261	1,725	1,260	19,321	14,973	9,904	10,321	76,872	64,641
1906	11,136	6,901	1,898	2,259	30,638	21,906	6,732	7,422	69,842	57,297
1907	5,754	4,442	2,498	2,131	30,492	21,486	7,026	7,499	67,915	57,781
1908	17,645	11,933	3,851	5,343	20,674	19,640	12,238	13,842	66,887	63,074
1909	7,586	6,698	2,236	1,963	11,259	10,948	31,847	31,807	67,088	66,653
1910[1]	10,683	9,664	9,184	10,527	11,786	10,943	6,664	8,559	55,496	57,162

[1] Included in "All other manufactures of wool" after 1910.

APPENDIX G.

General imports into the United States, 1891–1921.

QUANTITY.

	Imported from—							
	Persia.	British East Indies.	Russia.	China.	Germany.	France.	All other.	Total.
	Sq. yds.	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*	*Sq. yds.*
2	.....	4,636	115	3,541	3,147	4,703	6,298	658,006
2	.....	8,010	61	1,248	2,243	5,379	5,502	622,892
4	.....	9,072	847	1,236	4,545	4,463	5,218	688,364
7	.....	8,820	258	796	6,837	3,650	16,257	421,758
9	.....	6,616	38	1,081	19,397	6,665	15,007	696,836
8	.....	4,688	.....	380	34,170	12,193	11,543	626,597
3	.....	9,447	.....	877	52,321	8,090	10,209	470,757
5	.....	23,757	16,733	416	7,756	5,626	17,481	589,745
1	.....	34,035	20,789	1,279	10,899	11,388	19,876	631,547
1	.....	45,491	23,350	1,961	4,186	10,057	17,882	904,296
3	.....	72,312	14,353	2,675	8,409	13,793	27,110	858,951
1	.....	70,459	9,722	2,181	16,010	17,517	23,124	999,913
1	.....	61,314	21,930	1,195	19,088	15,946	32,389	1,079,731
1	.....	56,143	14,290	244	18,223	12,350	36,242	844,932
1	.....	40,658	10,450	91	13,106	14,967	51,616	818,850
1	.....	34,318	37,268	380	25,974	18,454	79,540	1,182,005
1	54,830	39,695	20,723	1,329	29,756	23,850	26,679	1,068,010
1	74,666	41,572	15,527	1,789	23,386	18,371	20,424	666,784
1	54,600	36,687	46,845	4,417	22,888	17,252	23,416	1,042,378
1	156,426	33,559	31,322	2,356	27,776	18,264	44,169	1,205,982
1	281,601	37,600	52,381	3,805	19,835	28,621	35,798	1,003,741
1	252,817	28,337	24,816	2,804	13,302	17,156	32,822	841,249
1	434,466	39,813	24,751	5,469	13,998	24,385	44,341	1,085,431
1	400,433	32,075	44,376	15,138	22,649	24,879	46,567	1,073,877
1	139,433	27,792	20,053	20,950	35,455	15,104	66,648	1,059,072
1	169,327	80,490	2,638	59,685	7,394	12,991	20,120	733,458
1	261,516	85,156	83,819	131,781	937	6,138	21,681	956,908
1	142,740	166,383	19,386	115,028	.....	3,513	19,369	640,291
1	41,461	37,056	2,406	72,627	.....	543	9,120	244,282
1	189,563	40,552	20,713	15,750	17,174	12,976	27,118	818,849
1	75,808	76,674	16,781	85,264	.....	2,255	6,312	353,255
1	130,464	86,725	4,244	89,942	.....	9,800	15,644	462,808
1	382,616	57,641	21,246	251,379	6,483	28,065	89,239	1,665,650
2	343,901	67,388	408	250,136	14,254	13,980	214,806	1,410,127

VALUE.

2	.....	$11,388	$395	$2,706	$9,102	$25,445	$11,982	$1,373,162
2	.....	24,020	646	3,398	9,272	25,250	10,655	1,285,657
4	.....	29,952	1,521	4,439	12,409	18,719	9,871	1,580,814
7	.....	23,117	610	2,736	15,632	8,815	15,012	959,526
9	.....	15,809	107	2,072	31,923	19,739	12,790	1,361,465
8	.....	12,640	.....	863	51,700	30,421	7,521	893,944
3	.....	23,327	.....	967	53,367	29,838	17,548	782,955
5	.....	86,089	33,426	1,375	19,488	19,718	30,267	1,790,132
1	.....	120,783	40,676	2,513	37,365	41,135	52,380	1,759,566
4	.....	166,181	51,992	4,750	18,288	30,074	49,408	2,748,793
7	.....	249,951	35,925	4,121	31,475	41,333	81,827	2,705,659
4	.....	255,615	37,713	5,303	46,513	58,729	78,671	3,447,776
9	.....	222,283	65,223	2,726	63,536	65,244	112,240	3,758,516
9	.....	174,613	46,344	322	67,844	47,310	108,366	2,797,308
6	.....	126,762	25,326	283	44,148	52,828	175,701	2,877,993
3	.....	120,101	113,327	776	77,391	72,861	301,203	4,643,520
9	$241,811	145,994	60,824	5,004	89,109	97,680	106,181	4,435,067
8	371,172	157,455	47,825	8,569	74,717	106,079	79,265	2,795,066
8	166,970	139,720	146,310	15,003	56,779	59,522	101,647	4,032,512
6	437,673	99,247	93,718	12,956	76,704	72,185	153,848	4,591,721
1	944,561	101,451	140,586	10,941	65,558	95,127	173,316	3,807,805
4	1,104,435	87,309	104,344	14,654	58,120	117,491	162,821	3,850,804
6	1,836,738	93,903	92,844	22,988	67,035	214,661	211,379	4,895,989
3	1,767,869	83,997	173,543	75,157	90,863	92,335	218,548	4,452,309
4	608,371	117,204	67,516	98,080	123,328	129,833	123,267	2,947,057
1	549,096	213,173	7,751	280,227	36,953	107,992	68,078	2,371,351
2	913,438	300,936	342,930	821,219	3,697	98,355	95,497	3,791,842
4	756,374	570,007	77,853	606,280	.....	54,734	56,867	2,861,432
8	315,912	144,889	24,241	304,006	.....	15,970	111,376	1,265,765
8	770,340	135,101	67,908	79,808	49,345	63,773	94,397	2,788,465
9	461,437	278,800	64,689	400,362	.....	36,296	21,280	1,657,573
8	1,311,803	298,402	31,959	441,526	.....	102,081	232,709	3,334,598
3	3,542,842	404,160	182,472	2,011,828	30,894	246,375	539,354	11,686,355
4	2,398,026	423,623	6,078	1,393,377	63,730	75,399	824,879	7,739,374

1913, is listed as independent of Turkey.
orts are recorded.

Wool carpets and rugs—Imports for consumption, 1890–1921.

TOTAL, INCLUDING FELT.

Fiscal year.	Quantity.	Value.	Duty.	Value per unit of quantity.	Ad valorem rate.
	Sq. yards.				*Per cent.*
1891	601,827	$1,564,890	$829,064	$2.60	52.98
1892	627,555	1,377,050	851,541	2.19	61.84
1893	687,483	1,566,615	976,290	2.28	62.72
1894	412,325	926,929	587,992	2.25	63.43
1895	666,794	1,384,196	633,895	2.08	45.79
1896	522,089	2,025,317	805,580	3.88	39.79
1897	435,109	2,505,028	997,052	5.76	39.80
1898	398,071	1,545,975	895,968	3.88	57.97
1899	662,041	1,922,246	1,291,187	2.90	67.17
1900	820,731	2,552,620	1,675,696	3.11	65.65
1901	855,810	2,711,270	1,776,188	3.17	65.52
1902	955,718	3,200,519	2,053,732	3.35	64.17
1903	1,086,635	3,748,583	2,383,370	3.45	63.58
1904	848,976	2,798,148	1,805,144	3.30	64.51
1905	814,389	2,909,092	1,831,572	3.57	62.96
1906	1,091,573	4,320,037	2,625,812	3.95	60.78
1907	1,076,241	4,420,145	2,660,860	4.11	60.20
1908	747,396	2,949,586	1,788,089	3.95	60.62
1909	988,000	3,748,556	2,312,797	3.79	61.70
1910	1,143,163	4,619,170	2,802,212	4.04	60.66
1911	1,011,525	3,887,734	2,399,369	3.85	61.72
1912	885,716	3,997,991	2,331,735	4.51	58.32
1913	[1] 940,969	[1] 4,263,982	2,498,729	4.53	58.60
1914	[2] 1,188,605	[2] 4,769,769	2,504,208	4.01	52.50
1915	1,079,876	3,212,046	1,455,272	2.97	45.31
1916	774,519	2,667,976	1,228,827	3.44	46.06
1917	981,459	3,731,084	1,714,047	3.80	45.94
1918	561,944	2,757,564	1,273,898	4.91	46.20
1919	267,006	1,263,165	582,858	4.73	46.14
1920	1,022,104	7,207,026	3,341,278	7.05	47.75
1921 [3]	1,384,388	8,867,218	4,063,543	6.41	45.83
1922 [4]	1,868,486	9,333,374	4,263,085	5.00	.....
July 1 to Sept. 21, 1922	569,614	2,819,094	1,333,616	4.95	47.31

AUBUSSON, AXMINSTER, MOQUETTE AND CHENILLE CARPETS, AND CARPETS, WOVEN WHOLE FOR ROOMS, AND ORIENTAL, BERLIN, AND OTHER SIMILAR RUGS.

1890	[5] 82,361	$190,930	$94,341	$2.32	49.41
1891	260,964	787,341	449,054	3.01	57.03
1892	351,663	1,079,411	642,762	3.07	59.55
1893	441,750	1,271,036	773,464	2.88	60.85
1894	272,114	768,395	470,626	2.82	61.25
1895	406,536	1,106,072	511,489	2.72	46.24
1896	105,377	258,975	103,590	2.46	40.00
1897	92,105	241,216	96,486	2.62	40.00

AUBUSSON, AXMINSTER, MOQUETTE, AND CHENILLE CARPETS.

1898	{ 6,526	$18,966	$7,586	$2.91	40.00
	{ 9,483	24,280	15,402	2.59	63.44
1899	16,759	43,711	27,540	2.61	63.00
1900	10,159	26,504	16,697	2.61	63.00
1901	9,513	23,724	15,197	2.50	64.04
1902	16,170	34,905	23,664	2.16	67.80
1903	21,537	43,277	30,233	2.01	69.86
1904	26,489	61,409	40,457	2.32	65.89
1905	18,747	38,178	26,519	2.04	69.46
1906	26,357	57,705	38,896	2.19	67.41
1907	21,135	48,146	31,939	2.28	66.34
1908	17,597	41,003	26,959	2.33	65.75
1909	21,080	47,221	31,536	2.23	66.80
1910	23,084	62,700	38,930	2.71	62.09
1911	24,351	46,935	33,384	1.93	71.13
1912	27,023	65,864	42,559	2.44	64.62
1913	24,799	67,625	41,929	2.73	62.00
1914 [6]	37,710	87,225	41,199	2.31	47.23

[1] Includes 1,325 square yards of carpet, valued at $3,720, on which duty was remitted.
[2] Includes 32 square yards of carpet, valued at $153, on which duty was remitted.
[3] Includes 445 square yards (1,069 pounds) valued at $2,029, paying additional duty of $481 because of 45 cents per pound surtax levied by emergency tariff act.
[4] Includes 1,517 square yards (3,507 pounds) valued at $6,195 paying additional duty of $1,578 because of 45 cents per pound surtax levied by emergency tariff act.
[5] "Aubusson, Axminster and chenille carpets, woven whole for rooms," in 1890.
[6] "And carpets and carpeting of like character" added by act of 1913.

ugs—Imports for consumption, 1891–1921—Continued.

STER, MOQUETTE, AND CHENILLE CARPETS—Continued.

	Quantity.	Value.	Duty.	Value per unit of quantity.	Ad valorem rate.
	Sq. yards.				*Per cent.*
	40,142	$121,653	$42,578	$3.03	35.00
	36,539	101,026	35,359	2.76	35.00
	96,934	344,873	120,705	3.55	35.00
	80,426	381,478	133,517	4.74	35.00
	48,689	249,665	87,383	5.13	35.00
	108,963	494,877	173,207	4.54	35.00
	275,991	1,270,508	444,678	4.60	35.00
	261,326	1,116,196	390,669	4.27	35.00
	56,817	228,695	80,043	4.02	35.00

HOLE FOR ROOMS, AND ORIENTAL, BERLIN, AUBUSSON, MINSTER, AND OTHER SIMILAR RUGS.

	(3)	$306,435	$122,574	40.00
	271,194	1,050,404	664,235	$3.87	63.24
	506,938	1,701,685	1,136,919	3.36	66.81
	649,111	2,329,105	1,515,842	3.59	65.08
	687,964	2,483,263	1,612,474	3.61	64.94
	771,112	2,945,092	1,872,038	3.82	63.56
	888,491	3,472,669	2,188,710	3.91	63.03
	675,801	2,529,219	1,619,908	3.74	64.04
	684,333	2,708,743	1,699,397	3.96	62.74
	925,521	4,066,289	2,459,485	4.39	60.48
	927,528	4,172,734	2,503,869	4.50	60.01
	627,842	2,748,584	1,664,492	4.38	60.56
	849,463	3,553,447	2,185,896	4.18	61.52
	1,004,009	4,392,786	2,660,723	4.37	60.57
	886,151	3,686,366	2,272,082	4.16	61.64
	760,295	3,781,058	2,196,689	4.97	58.10
	833,284	4,048,320	2,369,284	4.86	58.53
	993,380	4,437,279	2,372,487	4.47	53.46
	597,177	2,529,772	1,264,886	4.23	50.00
	497,538	2,185,717	1,092,858	4.39	50.00
	645,279	2,939,737	1,469,868	4.56	50.00
	401,407	2,157,850	1,078,925	5.38	50.00
	194,384	968,893	484,447	4.98	50.00
	771,922	6,308,901	3,154,451	8.17	50.00
	857,847	6,790,998	3,395,499	7.91	50.00
	1,264,238	7,079,036	3,540,002	5.60	50.00
	449,467	2,406,306	1,203,153	5.35	50.00

BRUSSELS CARPETS.

	145,981	$153,007	$89,696	$1.05	58.62
	86,128	90,471	57,832	1.05	63.92
	72,665	78,187	63,247	1.08	80.89
	67,744	71,821	58,536	1.06	81.50
	50,076	52,682	43,106	1.05	81.82
	67,038	68,709	30,180	1.02	43.92
	138,488	143,165	57,266	1.03	40.00
	114,660	133,297	53,319	1.16	40.00
	15,185	16,902	12,513	1.11	74.03
	14,999	16,234	13,093	1.08	80.65
	28,388	30,299	24,610	1.07	81.22
	37,336	39,857	32,371	1.07	81.22
	31,081	33,182	26,948	1.07	81.21
	31,975	34,359	27,812	1.07	80.95
	19,831	20,909	17,089	1.05	81.73
	13,223	14,705	11,700	1.11	79.57
	13,400	15,900	12,256	1.19	77.08
	9,281	11,403	8,645	1.23	75.81
	2,839	3,803	2,770	1.34	72.85
	7,705	10,442	7,567	1.36	72.47
	6,781	8,222	6,272	1.21	76.29

235 pounds) valued at $634 paying additional duty of $481 because of 45 cents
nergency tariff act.
(630 pounds) valued at $1,317 paying additional duty of $283 because of 45
y the emergency tariff act.

834 pounds) valued at $1,395 paying an additional duty of $375 because of 45
nergency tariff act.
(1,075 pounds) valued at $2,941 paying additional duty of $484 because of 45
y the emergency tariff act.

Wool carpets and rugs—Imports for consumption, 1890–1921—Continued.

BRUSSELS CARPETS—Continued.

Fiscal year.	Quantity.	Value.	Duty.	Value per unit of quantity.	Ad valorem rate.
	Sq. yards.				*Per cent.*
1911	5,507	$7,567	$5,449	$1.37	72.02
1912	1,532	2,290	1,590	1.49	69.45
1913	2,643	3,783	2,676	1.43	70.75
1914[1]	6,760	8,110	2,956	1.20	36.44
1915	17,239	17,909	4,477	1.03	25.00
1916	4,638	5,200	1,300	1.12	25.00
1917	5,339	7,047	1,761	1.32	25.00
1918	2,328	6,502	1,625	2.79	25.00
1919	122	468	117	3.84	25.00
1920	3,713	7,920	1,980	2.13	25.00
1921	13,021	25,858	6,464	1.98	25.00
1922	4,734	11,234	2,808	2.37	25.00
July 1 to Sept. 21, 1922	188	648	162	3.45	25.00

SAXONY, WILTON, AND TOURNAY VELVET CARPETS.

1890	86,375	$153,291	$84,856	$1.78	55.36
1891	62,653	118,543	71,237	1.89	60.09
1892	47,723	96,350	67,174	2.02	69.72
1893	47,140	95,716	66,570	2.03	69.55
1894	27,791	50,457	36,857	1.82	73.05
1895[2]	61,842	96,018	44,944	1.55	46.81
1896	85,831	128,057	51,222	1.49	40.00
1897	96,754	130,594	52,237	1.35	40.00
1898	21,264	35,658	23,277	1.68	65.28
1899	46,725	77,026	58,845	1.65	76.40
1900	54,938	89,773	68,872	1.63	76.72
1901	53,659	88,483	67,588	1.65	76.39
1902	61,170	101,442	77,279	1.66	76.18
1903	57,486	91,619	71,139	1.59	77.65
1904	53,002	84,588	65,636	1.60	77.60
1905	25,380	44,690	33,104	1.76	74.07
1906	33,974	62,880	45,536	1.85	72.42
1907	31,724	58,263	42,340	1.84	72.67
1908	16,310	34,545	23,604	2.12	68.33
1909	21,293	33,571	26,204	1.57	78.22
1910	20,450	40,711	28,554	1.99	70.14
1911	17,204	40,183	26,395	2.34	65.69
1912	11,414	23,307	16,171	2.04	69.38
1913	11,069	22,791	15,758	2.06	69.14
1914	34,606	64,851	24,359	1.87	37.56
1915	116,312	233,566	70,099	2.02	30.00
1916	73,379	170,395	51,118	2.32	30.00
1917	112,594	250,112	75,033	2.22	30.00
1918	35,486	121,367	36,410	3.42	30.00
1919	1,126	5,857	1,757	5.20	30.00
1920	92,760	301,113	90,334	3.25	30.00
1921	138,036	567,849	170,355	4.11	30.00
1922[3]	263,785	1,021,038	307,113	3.87	30.00
July 1 to Sept. 21, 1922	38,871	124,902	37,471	3.21	30.00

TAPESTRY BRUSSELS, PRINTED ON THE WARP OR OTHERWISE.

1890	53,386	$35,515	$21,331	$0.67	60.06
1891	23,835	17,395	10,813	.73	62.16
1892	7,148	5,526	4,211	.77	76.22
1893	4,651	3,430	2,674	.74	77.97
1894	2,348	2,211	1,541	.94	69.70
1895	29,851	17,109	7,719	.57	45.12
1896	41,653	24,512	10,417	.59	42.50
1897	9,282	7,054	2,997	.76	42.50
1898	165	150	106	.90	70.80
1899	1,087	898	663	.82	73.89
1900	483	343	272	.70	79.47
1901	739	885	560	1.20	63.38
1902	578	516	368	.89	71.31
1903	449	567	352	1.26	62.17
1904	416	224	206	.53	92.00
1905	90	121	73	1.33	61.00

[1] "Brussels carpets *and* carpeting of like character," under act of 1913.
[2] "And carpets of like character or description," added in 1895.
[3] Includes 480 square yards (1,782 pounds) valued at $1,825 paying additional duty of $802 because of 45 cents per pound surtax levied by emergency tariff act.

[illegible]ugs—Imports for consumption, 18[illegible]-1921—Continued.

[illegible]LS, PRINTED ON THE WARP OR OTHERWISE—Continued.

	Quantity.	Value.	Duty.	Value per unit of quantity.	[illegible]
	Sq. yards.				Per cent.
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	254	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	422	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	225	[illegible]	[illegible]	[illegible]
[illegible]	254	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible] VELVET CARPETS, PRINTED ON THE WARP OR OTHERWISE.

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

[illegible]

Wool carpets and rugs—Imports for consumption, 1890–1921—Continued.

TREBLE INGRAIN, THREE-PLY, AND ALL-CHAIN VENETIAN CARPETS—Continued.

Fiscal year.	Quantity.	Value.	Duty.	Value per unit of quantity.	Ad valorem rate.
	Sq. yards.				*Per cent.*
1902	14,652	$10,868	$7,570	$0.74	69.66
1903	22,598	16,658	11,634	.73	69.84
1904	18,075	13,100	9,220	.72	70.39
1905	14,205	11,000	7,525	.77	68.41
1906	17,918	13,122	9,190	.73	70.04
1907	23,120	19,036	12,700	.82	66.72
1908	13,584	11,203	7,469	.82	66.68
1909	17,576	15,373	10,015	.87	65.15
1910	1,853	1,675	1,077	.90	64.34
1911	4,835	4,253	2,764	.88	65.01
1912	8,510	8,942	5,449	1.05	60.94
1913	7,869	7,521	4,739	.95	63.02
1914	9,190	10,302	2,396	1.12	23.26
1915	4,733	4,724	944	1.00	20.00
1916	369	444	88	1.20	20.00
1917	83	252	50	3.00	20.00
1918	5	3		1.60	20.00
1919	150	353	71	2.35	20.00
1920	231	838	168	3.63	20.00
1921	174	297	49	1.70	20.00
1922[1]	358	1,326	274	3.70	20.66

WOOL DUTCH AND TWO-PLY INGRAIN CARPETS.

1890	70,526	$39,230	$17,411	$0.56	44.38
1891	43,986	24,885	13,704	.56	55.06
1892	38,427	21,711	14,064	.57	64.78
1893	33,721	19,079	12,352	.57	64.74
1894	11,455	6,623	4,252	.58	64.21
1895	21,562	12,121	3,829	.56	31.58
1896	24,853	14,645	4,393	.59	30.00
1897	22,552	15,152	4,545	.67	30.00
1898	14,163	8,168	5,264	.57	64.44
1899	9,198	5,163	3,720	.56	72.07
1900	9,350	5,231	3,775	.55	72.17
1901	3,141	1,692	1,242	.54	73.42
1902	5,809	2,921	2,214	.50	75.80
1903	3,729	2,073	1,500	.55	72.39
1904	3,107	3,331	1,891	1.07	56.79
1905	2,256	2,270	1,314	1.01	57.88
1906	1,547	1,241	774	.80	62.45
1907	1,752	1,693	992	.96	58.62
1908	829	1,291	665	1.56	51.56
1909	768	675	408	.87	60.48
1910	27	22	13	.80	62.50
1911	10	12	6	1.20	55.00
1912	366	430	237	1.17	55.32
1913	449	474	270	1.06	57.05
1914	182	179	44	.98	24.58
1915	1,320	1,312	262	.99	20.00
1916	557	519	103	.93	20.00
1917	2,686	3,629	725	1.35	20.00
1918	3	6	1	2.00	20.00
1919					
1920	10	15	3	1.50	20.00
1921	1,214	5,986	1,197	4.10	20.00
1922	27	68	14	2.52	20.59

DRUGGETS AND BOCKINGS, PRINTED, COLORED OR OTHERWISE.

1890	1,680	$654	$448	$0.39	68.53
1891	2,796	1,332	1,005	.48	75.45
1892	4,075	2,002	1,697	.49	84.79
1893	4,471	2,311	1,908	.52	82.57
1894	3,137	1,427	1,261	.45	88.37
1895	2,406	822	246	.34	30.00
1896	1,592	778	233	.48	30.00
1897	3,363	1,271	381	.38	30.00
1898	3,737	2,382	1,745	.63	73.26
1899	2,224	1,295	1,007	.58	77.78
1900	4,409	2,366	1,916	.53	80.99

[1] Includes 42 square yards (20 pounds), valued at $112, paying additional duty of $9, because of 45 cents per pound surtax levied by emergency tariff act.

ıgs—Imports for consumption, 1890–1921—Continued.

CINGS, PRINTED, COLORED OR OTHERWISE—Continued.

	Quantity.	Value.	Duty.	Value per unit of quantity.	Ad valorem rate.
	Sq. yards.				*Per cent.*
	2,998	$1,892	$1,416	$0.63	74.87
	7,542	4,263	3,364	.56	78.92
	6,108	3,454	2,725	.56	78.90
	4,997	3,109	2,342	.62	75.36
	5,992	3,854	2,859	.64	74.20
	15,783	10,439	7,647	.66	73.26
	10,252	7,321	5,183	.74	70.81
	21,899	18,007	12,020	.82	66.76
	18,285	14,371	9,771	.78	67.99
	36,537	30,587	20,273	.83	66.28
	24,866	21,524	14,080	.86	65.42
	18,812	14,694	10,016	.78	68.17
	20,916	17,010	11,405	.81	67.05
	26,519	18,635	4,610	.70	24.73
	7,489	6,131	1,226	.82	20.00
	19,137	15,529	3,105	.81	20.00
	11,720	10,025	2,005	.85	20.00
	8,661	9,409	1,881	1.09	20.00
	3,273	2,960	592	.90	20 00
	4,914	7,716	1,543	1.57	20.00
	9,010	9,743	1,949	1.08	20.00
	13,690	16,587	3,317	1.21	20.00
	5,607	6,872	1,374	1.23	20.00
FELT CARPETING.					
	1,691	$885	$540	$0.52	61.02
	7,249	3,728	2,288	.51	61.39
	6,836	3,331	2,084	.49	62.57
	3,288	2,071	1,190	.63	54.47
	6,373	3,207	1,073	.50	33.45
	6,346	3,097	929	.49	30.00
	7,104	3,838	1,151	.54	30.00
	36	14	7	.40	50.00
	1,422	533	266	.37	50.00
	1,461	971	485	.66	50.00
	134	70	35	.52	50.00
	8,008	2,185	1,092	.72	50.00
	691	925	462	1.34	50.00
	1,795	2,635	1,317	1.47	50.00
	4,013	1,719	859	.42	50.00
	3	5	2	1.67	50.00
	47	23	11	.48	50.00
	54	67	33	1.23	50.00
	42	43	21	1.02	50.00
	46	193	96	4.17	50.00
	5	8	4	1.54	50.00
	3	10	5	3.33	50.00
	5,367	8,348	2,052	1.55	24.58
	2,485	2,509	501	1.01	20.00
	2,371	1,439	287	.60	20.00
	960	305	61	.31	20.00
	14	13	2	.92	20.00
	1,062	1,547	309	1.46	20.00
	8,057	10,097	2,019	1.25	20.00
	4,849	10,127	2,025	2.09	20.00
	385	1,018	204	2.64	20.00
ETS OF WOOL, OR IN PART OF, N. S. P. F.					
	73,170	$72,344	$28,937	$0.99	40.00
	50,595	50,113	21,396	.99	42.70
	38,344	33,402	16,701	.87	50.00
	10,691	15,839	7,919	1.48	50.00
	2,695	4,744	2,372	1.76	50.00
	6,443	9,935	3,457	1.54	34.79
	18,291	16,507	4,952	.90	30.00
	11,301	13,150	3,945	1.16	30.00
	14,362	15,850	7,782	1.10	49.09
	14,350	16,389	8,194	1.14	50.00

ı 1895.

Wool carpets and rugs—Imports for consumption, 1890–1921—Continued.

CARPETS OF WOOL, OR IN PART OF, N. S. P. F.—Continued.

Fiscal year.	Quantity.	Value.	Duty.	Value per unit of quantity.	Ad valorem rate.
	Sq. yards.				*Per cent.*
1900	25,035	$26,758	$13,379	$1.07	50.00
1901	16,497	19,394	9,632	1.17	50.00
1902	20,678	26,284	13,142	1.27	50.00
1903	21,008	33,796	16,898	1.61	50.00
1904	15,126	28,257	14,128	1.87	50.00
1905	21,096	36,949	18,474	1.75	50.00
1906	26,952	44,435	22,217	1.65	50.00
1907	27,822	51,690	25,845	1.86	50.00
1908	21,913	38,827	19,413	1.77	50.00
1909	30,829	36,393	18,196	1.18	50.00
1910 [1]	27,113	40,762	20,381	1.50	50.00
1911	25,102	35,005	17,502	1.39	50.00
1912	19,702	32,834	16,417	1.67	50.00
1913	15,768	24,579	12,289	1.56	50.00
1914 [2]	24,657	39,555	15,009	1.60	37.94
1915	57,885	36,277	7,255	.60	20.00
1916	8,740	5,104	1,020	.59	20.00
1917	5,385	9,253	1,850	1.72	20.00
1918	4,008	7,771	1,554	1.94	20.00
1919	3,937	4,883	977	1.24	20.00
1920	16,544	38,949	7,790	2.35	20.00
1921	49,940	109,280	21,856	2.19	20.00
1922	48,961	62,467	12,493	1.28	20.00
July 1 to Sept. 21, 1922	9,118	30,874	6,175	3.39	20.00

MATS, SCREENS, HASSOCKS, AND RUGS, NOT EXCLUSIVELY OF VEGETABLE MATERIAL, BUT IN PART OR WHOLE OF WOOL OR WORSTED.

1890		$1,046,748	$418,699		40.00
1891		414,196	165,678		40.00
1892					
1893					
1894					
1895					
1896 [3]		[4] 1,315,479	525,866		40.00
1897		1,878,472	751,388		40.00
1898 [5]	7,807	27,215	10,925	3.48	40.14
1899	711	376	276	.52	73.40
1900	795	1,441	1,292	1.81	89.70
1901	3	2	1	.66	50.00
1902	18	243	105	13.50	43.20
1903	29	144	72	4.97	50.00
1904	225	210	174	.93	82.94
1905	2	1.50	0.75	.75	50.00
1906	3	3	1.50	1.00	50.00
1907	102	153	81	1.50	52.94
1908	37	56	28	1.51	50.00
1909					
1910 [6]	43	416	195	9.67	46.87

[1] "Carpets and carpeting of wool and flax or cotton, n. s. p. f.," under act of 1909.
[2] "Carpets and carpeting of wool, or wool and cotton, n. s. p. f.," under act of 1913.
[3] Mats, rugs for floors, covers, hassocks, bedsides, art squares, and other portions of carpets and carpeting, n. s. p. f., 1896 and 1897.
[4] Includes $814 on which duty was remitted.
[5] Mats, rugs for floors, *screens*, covers, hassocks, etc., 1898–1910.
[6] Not listed separately, after 1910.

...sm of wool carpets and rugs, calendar years ... and ...

	1924		1925	
	Square yards.	Value.	Square yards.	Value.
...rpets, and chenille carpets				
...acter	69,379	$202,873	226,146	$1,130,340
...g of like character	21,711	33,157	5,757	9,201
...rpets, and oriental, Berlin, ...d other similar rugs	934,473	3,300,861	1,623,306	6,730,134
...ated, colored, or otherwise	38,636	15,645	10,511	10,963
	7,162	9,590	2,000	3,400
...ay velvet carpets, and car-	112,900	221,677	237,203	914,000
...on the warp or otherwise,	139,373	93,962	10,200	14,477
...acter	11,694	12,900	355	1,320
...nd all chain Venetian car-				
...arpets, printed on the warp	62,126	129,733	4,000	13,371
...ing of like character	1,434	1,000		
...ngrain carpets				
...wool or wool and cotton,	17,379	22,797	52,035	78,143
	1,374,248	4,435,319	1,500,033	8,917,000

...carpets and rugs for consumption, by quarters, 1913–1921.

[Calendar years.]

Value.	Duty.	Quarters ended—	Quantity.	Value.	Duty.
			Sq. yds.		
$972,862	$586,153.76	Mar. 31, 1918...	115,107	$536,194	$249,636.78
713,323	405,787.64	June 30, 1918...	130,846	616,079	296,489.70
1,229,986	722,085.98	Sept. 30, 1918...	68,599	254,924	115,887.20
813,077	459,623.27	Dec. 31, 1918...	36,532	168,438	70,760.82
3,729,248	2,173,650.65	1918.....	351,084	1,575,635	732,773.10
1,652,565	800,323.80	Mar. 31, 1919...	78,945	475,226	227,988.50
1,083,141	522,175.33	June 30, 1919...	82,930	364,577	168,219.70
947,671	420,562.30	Sept. 30, 1919...	186,073	953,397	462,553.45
741,942	333,769.45	Dec. 31, 1919...	126,278	1,113,856	531,337.25
4,425,319	2,076,835.88	1919.....	474,226	2,907,556	1,390,198.90
842,234	378,510.85	Mar. 31, 1920...	313,431	2,575,145	.....
680,199	322,429.70	June 30, 1920...	307,030	2,565,809	.....
725,460	332,540.40	Sept. 30, 1920...	388,762	2,344,038	.....
846,530	395,570.85	Dec. 31, 1920...	351,676	2,180,891	.....
3,094,423	1,429,051.80	1920.....	1,450,899	9,665,883	4,491,459
478,067	220,984.50	Mar. 31, 1921...	307,627	2,180,118	.....
617,919	279,730.75	June 30, 1921...	337,392	2,192,074	.....
998,773	460,483.30	Sept. 30, 1921...	443,910	2,191,841	.....
712,665	318,850.15	Dec. 31, 1921...	515,332	2,293,170	.....
2,808,424	1,280,048.70	1921.....	1,604,261	8,917,000	4,097,879
$1,076,081	$514,094.00				
943,565	420,619.05				
780,707	353,274.00				
824,584	374,398.05				
3,624,937	1,662,384.10				

APPENDIX H.

Actual and relative wholesale prices for wool carpets, 1913–1922.

[Market: New York City. Unit: Running yard, 27-inch. Basis for relative prices: Average of actual prices, July 1, 1913, to June 30, 1914=100.]

Year and month.	Actual prices.				Relative prices.			
	Wilton 5-frame Bigelow.	Lowell Axminster 6¾ by 7, 189-pitch.	Tapestry, 8-wire, 200-pitch.	Brussels 5-frame Bigelow, 9-wire, 256-pitch.	Wilton, 5-frame Bigelow	Lowell Axminster, 6¾ by 7, 189-pitch.	Tapestry, 8-wire 200-pitch.	Brussels, 5-frame, Bigelow, 9-wire 256-pitch.
1913.								
January	$2.4240	$1.08	$0.6500	$1.2960	103	102	100	101
February	2.4240	1.08	.6500	1.2960	103	102	100	101
March	2.4240	1.08	.6500	1.2960	103	102	100	101
April	2.4240	1.08	.6500	1.2960	103	102	100	101
May	2.4240	1.08	.6500	1.2960	103	102	100	101
June	2.4240	1.08	.6500	1.2960	103	102	100	101
July	2.4240	1.08	.6500	1.2960	103	102	100	101
August	2.4240	1.08	.6500	1.2960	103	102	100	101
September	2.4240	1.08	.6500	1.2960	103	102	100	101
October	2.4240	1.08	.6500	1.2960	103	102	100	101
November	2.3280	1.056	.6500	1.2720	99	99	100	99
December	2.3280	1.056	.6500	1.2720	99	99	100	99
1914.								
January	2.3280	1.056	.6500	1.2720	99	99	100	99
February	2.3280	1.056	.6500	1.2720	99	99	100	99
March	2.3280	1.056	.6500	1.2720	99	99	100	99
April	2.3280	1.056	.6500	1.2720	99	99	100	99
May	2.3280	1.056	.6500	1.2720	99	99	100	99
June	2.3280	1.056	.6500	1.2720	99	99	100	99
July	2.3280	1.056	.6500	1.2720	99	99	100	99
August	2.3280	1.056	.6500	1.2720	99	99	100	99
1914.								
September	2.3280	1.056	.6500	1.2720	99	99	100	99
October	2.3280	1.056	.6500	1.2720	99	99	100	99
November	2.3520	1.032	.6500	1.2480	100	97	100	98
December	2.3520	1.032	.6500	1.2480	100	97	100	98
1915.								
January	2.3520	1.0320	.6500	1.2480	100	97	100	98
February	2.3520	1.0320	.6500	1.2480	100	97	100	98
March	2.3520	1.0320	6500	1.2480	100	97	100	98
April	2.3520	1.0320	.6500	1.2480	100	97	100	98
May	2.4580	1.0800	.6650	1.2960	104	102	102	101
June	2.4580	1.0800	.6750	1.2960	104	102	104	101
July	2.4580	1.1040	.6750	1.3200	104	104	104	103
August	2.4580	1.1040	.6750	1.3200	104	104	104	103
September	2.4580	1.1040	.6750	1.3200	104	104	104	103
October	2.4580	1.1040	.6750	1.3200	104	104	104	103
November	2.4960	1.1520	.7000	1.3440	106	108	108	105
December	2.4960	1.1520	.7000	1.3440	106	108	108	105
1916.								
January	2.6400	1.2480	.7375	1.4160	112	117	113	111
February	2.6400	1.2480	.7500	1.4160	112	117	115	111
March	2.7360	1.2480	.7500	1.4400	116	117	115	113
April	2.7360	1.2480	.7750	1.4400	116	117	119	113
May	2.8800	1.3440	.8000	1.5360	122	126	123	120
June	2.8800	1.3440	.8250	1.5360	122	126	127	120
July	2.9280	1.4400	.8250	1.6080	124	135	127	126
August	2.9280	1.4400	.8250	1.6080	124	135	127	126
September	2.9280	1.4400	.8250	1.6080	124	135	127	126
October	2.9280	1.4400	.8250	1.6080	124	135	127	126
November	3.1680	1.5120	.9125	1.6560	134	142	140	129
December	3.1680	1.5120	.9250	1.6560	134	142	142	129
1917.								
January	3.1680	1.512	.9250	1.6560	134	142	142	129
February	3.1680	1.512	.9250	1.6560	134	142	142	129
March	3.4560	1.656	1.0250	1.8000	146	155	158	141
April	3.4560	1.656	1.0250	1.8000	146	155	158	141
May	3.4560	1.656	1.0750	1.8480	146	155	165	144
June	3.4560	1.656	1.0750	1.8480	146	155	165	144
July	3.4560	1.656	1.0750	1.8480	146	155	165	144
August	3.4560	1.656	1.0750	1.8480	146	155	165	144
September	3.4560	1.656	1.0750	1.8480	146	155	165	144
October	3.4560	1.656	1.0750	1.8480	146	155	165	144
November	3.4560	1.656	1.0750	1.9680	146	155	165	154
December	3.5520	1.728	1.1250	2.0880	151	162	173	163

e wholesale prices for wool carpets, 1913–1922—Continued.

Actual prices.				Relative prices.*			
ton me ge- w.	Lowell Axminster 6¾ by 7, 180-pitch.	Tapestry 8-wire, 200-pitch.	Brussels, 5-frame Bigelow, 9-wire, 256-pitch.	Wilton 5-frame Bigelow.	Lowell Axminster, 6¾ by 7, 180-pitch.	Tapestry 8-wire, 200-pitch.	Brussels, 5-frame, Bigelow, 9-wire, 256-pitch.
5520	$1.728	$1.1250	$2.0880	151	162	173	163
5520	1.728	1.1250	2.0880	151	162	173	163
6705	1.7806	1.1500	2.1801	156	167	177	170
7680	1.824	1.1500	2.2560	160	171	177	176
2720	2.112	1.3250	2.4480	181	198	204	191
2720	2.112	1.3250	2.4480	181	198	204	191
7184	2.112	1.3250	2.7205	200	198	204	213
8960	2.112	1.3250	2.8320	207	198	204	221
2320	2.280	1.4500	3.0336	222	214	223	237
3760	2.352	1.4500	3.1200	228	221	223	244
3760	2.352	1.4500	3.1200	228	221	223	244
3760	2.352	1.4500	3.1200	228	221	223	244
3760	2.3520	1.4500	3.12	228	221	223	244
3760	2.3520	1.4500	3.12	228	221	223	244
9022	2.2204	1.2500	3.0410	208	209	192	238
8960	2.2080	1.3500	3.1440	217	208	208	246
0819	2.2699	1.4500	3.2524	215	213	223	254
1840	2.3040	1.4500	3.3120	220	217	223	259
1840	2.3040	1.4500	3.3120	220	217	223	259
1840	2.3040	1.4500	3.3120	220	217	223	259
1840	2.3040	1.4500	3.3120	220	217	223	259
1920	2.7360	1.8000	3.9840	262	257	277	311
.1920	2.7360	1.8000	3.9840	262	257	277	311
.1920	2.7360	1.8000	3.9840	262	257	277	311
.4800	3.3000	1.9000	4.1760	275	310	292	326
.4800	3.3000	1.9000	4.1760	275	310	292	326
.4800	3.3000	1.9000	4.1760	275	310	292	326
.4800	3.3000	1.9000	4.1760	275	310	292	326
.1040	3.8000	2.1000	4.3200	301	357	323	338
.1040	3.8000	2.1000	4.3200	301	357	323	338
.1040	3.8000	2.1000	4.3200	301	357	323	338
.1040	3.8000	2.1000	4.3200	301	357	323	338
.1040	3.8000	2.1000	4.3200	301	357	323	338
.1040	3.8000	2.1000	4.3200	301	357	323	338
.4320	3.2000	2.1000	4.3200	273	357	323	338
.4320	3.2000	2.1000	4.3200	273	357	323	338
.4320	3.2000	2.1000	4.3200	273	357	323	338
.4320	3.2000	2.1000	4.3200	273	357	323	338
.4320	3.2000	2.1000	4.3200	273	357	323	338
.0400	2.2500	1.3500	3.3120	214	211	208	258
.0400	2.2500	1.3500	3.3120	214	211	208	258
.0400	2.2500	1.3500	3.3120	214	211	208	258
.0400	2.2500	1.3500	3.3120	214	211	208	258
.0400	2.2500	1.3500	3.3120	214	211	208	258
.0400	2.2500	1.3500	3.3120	214	211	208	258
.0400	2.2500	1.3500	3.3120	214	211	208	258
.6080	2.0500	1.1500	2.7360	195	193	176	214
.6080	2.0500	1.1500	2.7360	195	193	176	214
.6080	2.0500	1.1500	2.7360	195	193	176	214
.6080	2.0500	1.1500	2.7360	195	193	176	214
.6080	2.0500	1.1500	2.7360	195	193	176	214
.6080	2.2000	.....	2.7360	195	207	.....	214
.6080	2.2000	.....	2.7360	195	207	.....	214
.6080	2.2000	.....	2.7360	195	207	.....	214
.6080	2.2000	.....	2.7360	195	207	.....	214
.6080	2.2000	.....	2.7360	195	207	.....	214
.6080	2.2000	.....	2.7360	195	207	.....	214
.8080	2.3500	.....	2.8800	205	221	.....	217
.8080	2.5000	.....	2.8800	205	235	.....	217

APPENDIX I.

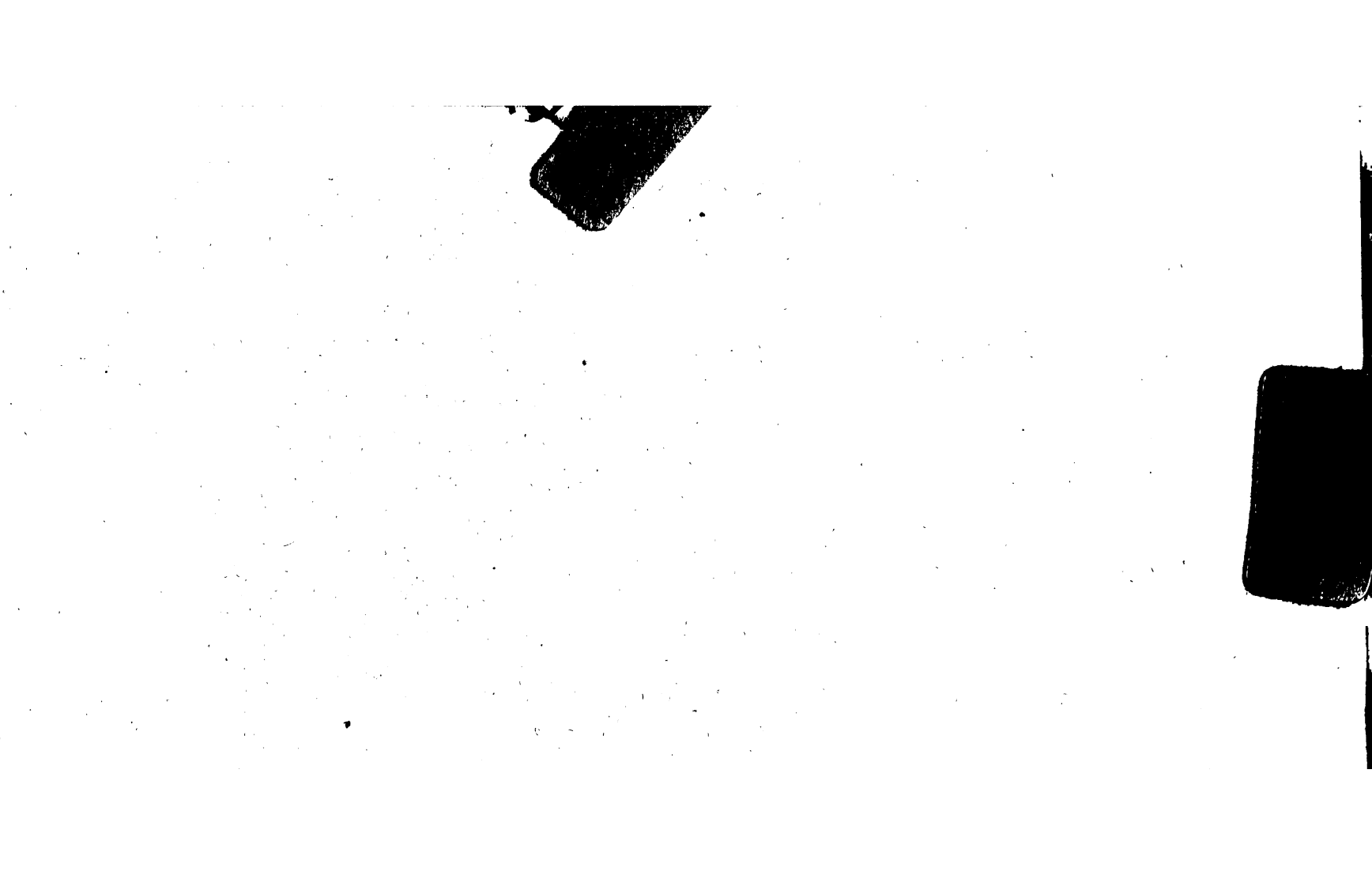
Illustrations of construction details of various types of wool rugs.

(Selected from returns submitted to Tariff Commission.)

Type of rug.	Yarn.	Yarn count.	Pounds of yarn per rug 9 by 12 feet.
Chenille Axminster:			
Sample No. 1	Woolen (filling)	25 yds. per oz	29.61
	Woolen (chenille)	58 yds. per oz	21.52
	Cotton (binding warp)	9/4	3.95
	Cotton (selvage)	20/3	.44
	Cotton (for the chenille)	24/3	2.17
		50/3	.86
	Jute (stuffer warp)	12-lb	8.37
			66.92
Sample No. 2	Woolen (backing)	20 yds. per oz	37.28
	Woolen (chenille)	45-yd./3 p'y	32.31
	Cotton (warp for making the chenille; also used to bind the chenille yarn to the wool back).	30/3	1.75
	Cotton (for chenille)	40/3	1.62
	Cotton (warp)	9/4	3.47
	Linen (selvage)	30 lea, 3 ply	.32
	Jute (stuffer warp)	10-lb	6.65
			83.40
Smyrna	Woolen (chenille)	10 cut/9 ply	25.50
	Cotton (warp)	11/5	2.25
	Jute (filling)	17-lb./7 ply	20.00
			47.75
Axminster:			
Sample No. 1	Woolen (face)	60 yds. per oz	15.42
	Cotton (warp)	9/3	5.52
	Jute (filling)	13-lb	4.11
			25.05
Sample No. 2	Woolen (face)	35 yds. per oz	13.47
	Cotton (warp)	12/3	4.05
	Jute (filling)	14½-lb	13.86
			31.38
Sample No. 3	Woolen (face)	54 yds. per oz	18.67
	Cotton (warp)	8/3	5.81
	Jute (filling)	13-lb	14.54
			39.02
Wool wilton:			
Sample No. 1	Woolen (pile)	2-run/3 ply	28.99
	Cotton (filling and chain warp)	8/3	10.76
	Jute (stuffer warp)	14-lb	6.75
			46.50
Sample No. 2	Woolen (pile)	72 yds. per oz./3 ply	23.93
	Linen (filling)	5½ lea	5.22
	Cotton (chain warp)	8/3	5.58
	Jute (stuffer warp)	14-lb	8.38
			43.11
Worsted Wilton:			
Sample No. 1	Worsted (pile)	12/2/2	27.74
	Cotton (chain warp and stuffer warp)	8/3	10.44
	Cotton (filling)	8/4	11.19
			49.37
Sample No. 2	Worsted (pile)	16/2/3	34.95
	Cotton (filling)	10/5	5.85
	Cotton (chain)	8/4	7.25
	Cotton (stuffer)	8/4	3.49
			51.54

construction details of various types of wool rugs—Continued.

Yarn.	Yarn count.	Pounds of yarn per rug 9 by 12 feet.
Worsted (pile)	17/3	17.33
Linen (filling)	6 lea	5.13
Cotton (chain warp)	8/3	5.25
Jute (stuffer warp)	15-lb	4.18
		31.89
Worsted (pile)	17/2 ply/3 cable	17.25
Linen (filling)	5½ lea	4.50
Cotton (chain warp)	8/3	4.50
Jute (stuffer warp)	16-lb	4.01
		30.26
Woolen (pile)	58 yds. per oz	7.10
Cotton (chain warp)	9/3	2.73
Jute (filling)	9-lb	4.73
Jute (stuffer)	16-lb	9.28
		23.84
Woolen (pile)	30 yds. per oz./3 ply	10.70
Cotton (chain warp)	9/4	3.57
Jute (filling)	14-lb	6.83
Jute (stuffer)	15-lb	11.90
		33.00
Woolen (pile)	38 yds. per oz./3 ply	8.11
Cotton (chain warp)	8/3	2.58
Jute (filling)	10-lb	3.97
Jute (stuffer)	16-lb	9.01
		23.67
Worsted (pile)	12½/2 ply/3 cable	4.37
Linen (filling)	6 lea	3.54
Cotton (chain warp)	9/3	3.01
Jute (stuffer warp)	16-lb	10.41
		21.33
Worsted (pile)	12/2/3	6.24
Cotton (chain warp)	9/3	3.87
Jute (filling)	4½-lb. 2/ply	4.90
Jute (stuffer)	15-lb	13.42
		28.43
Worsted (pile)	13½/2/3	5.65
Linen (filling)	5½ lea	4.86
Cotton (chain warp)	8/3	3.47
Jute (stuffer)	16-lb	11.14
		25.12



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:ED STATES TARIFF COMMISSION
WASHINGTON

INFORMATION SURVEYS

ON THE ARTICLES IN

:AGRAPH 288 (In part) OF THE TARIFF ACT OF 1913

:ELATED ARTICLES IN OTHER PARAGRAPHS

WOOL KNIT GOODS

:8:
it Fabrics
siery
oves and Mittens

Paragraph 291:
Wool Knitted Articles, n. s. p. f.

REVISED EDITION

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UNITED STATES TARIFF COMMISSION.

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PREFACE.

f a series of tariff information surveys prepared by
ɔes Tariff Commission and transmitted to the Com-
and Means. The series covers all of the articles and
ɔvided for in the tariff act of October 3, 1913, and
fically provided for. It is arranged in the numerical
ıphs of that act.
; two or more paragraphs have been combined in one
doing this, industrial relationship of the articles has
'hen possible. In those instances where a paragraph
ed under a preceding paragraph of the tariff act,
ıde to this fact at the point where the paragraph
ɛrical order. Where one grade of an article is dutiable
ıde of the same article is on the free list, the article
der the dutiable paragraph, which appears first in
r in the tariff act. In certain instances articles of
relationship and which occur in separate paragraphs
t have been combined under one paragraph for con-
ɔussion. Reference is made to this fact at the point
nodities would naturally occur in numerical order.
ıphlet in the series is an "Introduction and Index,"

uctory chapter discussing the scope of the series and
ɔhod of treatment.
ɔetical index of the articles provided for in the tariff
owing the paragraph of the act in which the article
ɔr and, if discussed under a different paragraph, the
ı paragraph.
the pamphlets in the series, showing the paragraphs
luded in each pamphlet.
use of this "Introduction and index" the exact loca-
cussion relating to a given article or commodity can

ɹration of this report the Tariff Commission has had
Evelina P. Kean, of the textile division of the com-
and of others.

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WOOL KNIT GOODS.

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finish and weight they resemble a woven cloth they are sold by the same name.

Knit goods differ primarily in construction from woven fabrics in being made of one thread or one series of threads traversing the fabric in one direction, either across the fabric, which is weft knitting, or endwise of the fabric, which is warp knitting. The structure of the fabric in either case is made up of connecting loops formed on needles. Weft-knit fabric is made from one or more weft threads traveling from needle to needle, forming adjacent loops and returning another series of loops. Each row of loops across the width of the fabric forms a course, each row in the length a wale. Warp fabrics are knit from any number of threads arranged on a beam as are the warp threads for a woven fabric, but instead of the texture being built up by the crossing and recrossing of another series of threads the warp threads only, running longitudinally, make up the knitted fabric. If one needle were to operate continuously on the same warp thread a number of chains would be formed, but each thread is controlled by a guide which lifts it back and forth from one needle to another, interlocking the loops of the different threads in such a manner that a continuous fabric results. It will be seen that color variation in weft fabrics can most easily be secured by introducing the different yarns in the formation of the length to produce horizontal stripes. In warp-knitted fabrics an indefinite number of color combinations are possible by the distribution of the yarns on the warp beam which will effect stripes longitudinally. Further designs can be attained by changes in the manner of shifting the threads from needle to needle.

The texture and appearance of knit fabrics can be considerably changed by stitch selection and stitch formation. There are three general types of weft-knit fabrics—(1) plain, (2) ribbed, (3) purled. In a plain weft-knit fabric the sides of the loops all lie on the face of the fabric, giving the lined appearance of the wales, and the loop ends all lie on the back of the fabric. Two sets of needles, operating in different planes and so forming loops on opposite sides of the fabric, produce an emphasized appearance of the wales or groups of wales, which because of this prominence are called *ribs*. Some of the ribs appear on the face of the fabric and some on the back, according to the number of needles in each plane. If one wale appears alternately on the face of the fabric with one on the reverse, the fabric is known as a 1 and 1 rib. The number of wales showing on either side of the fabric may be grouped, as, for example, 2 on one side and 1 on the other, or 5 on one side and 3 on the other, forming, respectively, a 2 and 1 and a 5 and 3 rib. Purling or pearling is effected by reversing consecutive stitches in a course, so that loops which would normally appear upon one side of the fabric will occur upon the other. If a fabric be purled at alternate courses, raised lines will appear running horizontally. As the greatest contraction is in the length, so the greatest elasticity is in that direction, just opposite from that of ribbed fabrics.

These three types of fabrics, plain, ribbed, and purled, may be modified by the use of different kinds of stitches. One of the most frequently seen is the tuck stitch, which is formed by the retention of one or more loops in the needle before the completion of the stitch. This results in greater prominence at the stitches tucked, giving

ınd bulk. Tucking is therefore used not only for
ıable but also where a greater stretch or a heavier
An extra bulk is obtained by applying the tuck
bing process. The *cardigan* rib is the alternating
ς stitches on both the ribs of the face and the ribs
.e fabric. The *half cardigan* or royal rib is formed
ɜeries of ribs plain and the other series alternately
. These stitches are so frequently used for heavy
t "cardigan jacket" has become a common term.
rics may be divided into two general classes[1]
and (2) open fabrics. *Close fabrics*, as the term
in which the loops are intimately interwoven, giving
e. The increased thickness as obtained by ribbing
reft-knitted fabrics may be imparted by knitting
warp threads simultaneously, whereby a fabric of
is secured. An *open fabric* is one in which the warp
ted at intervals only. Warp-knit fabrics vary in
heaviest overcoatings to the most diaphanous nets.
ıst unique characteristic of weft-knitted fabric, its
h, while making it unsuitable for some purposes
ıdapts it to others, most especially for clothing to be
ly, where a smooth, snug fit is desirable. The tensile
p-knitted fabrics lie midway between those of weft
woven fabrics. Because of the sidewise interlocking
warp-knit fabric, it is much less elastic on the width
ıbrics; hence not as suited to use for close-fitting
ɔut more useful for outerwear. These fabrics are
but the stretch is less excessive than in weft-knitted
ɐqual as to length and width. They are particularly
es, allowing a slight conformity to the shape of the
ıger of undue bagginess in the article. Warp-knit
. used in making cotton gloves. For gloves cut
ric, jersey cloth made on weft machines is very
ɔol has more natural elasticity than cotton and will
shape to which stretched.

mpeting articles.—Where woolen knit fabrics are used
hey encounter, to some extent, competition from
t apparently this competition is not very serious, as
ar can be made to fit better and is more comfortable,
readily with the movement of the body. Warp-
ve much the same uses as woven fabrics, and when
lar material and weight they will be competitive.
and heavy woven coatings are more and more being
-knit fabrics. For coatings the warp-knit fabrics
ıpped so that the loop formation is not apparent.
and weft-knit fabrics are somewhat competitive as
weft-knit jerseys which are used for suits and dresses
ght jerseys used for gloves.

DOMESTIC PRODUCTION.

rsted, cashmere and botany, and what is
are used in making wool knit fabrics.

p. 120.

WOOL KNIT GOODS.

WOOL KNIT FABRICS.

SUMMARY.

ugh the knit goods industry is one of the oldest in the country
of knit fabrics in a similar manner to woven fabrics is so recent
ctically an entire new line of manufacture has been estab-
line which is as yet only in its infancy. The popularity of
ric has increased to such an extent that it is now consid-
ndard for ready-to-wear clothing and even for the use of
istress. There is undeniably a big future in knit fabric as
son brings out new types which adequately replace similar
brics.

oduction of such knit fabric is not as yet definitely estab-
the United States as a distinct branch of the knit goods
Most frequently wool fabrics are made by small concerns
it other wool goods. One or two large concerns have
nterested in the piece goods trade.

e most part these fabrics are sold to the "cutting up"
at is to the manufacturers of ready-to-wear garments,
women's suits, coats and dresses and men's overcoats.
it fabric is, however, becoming an ever-increasing factor
rade, the very great width in which it is obtainable making
lly economical for cutting garments for which large pieces
ed.

y is the principal foreign producer of wool knit fabrics,
to 1914 made goods of this character in larger quantities
other country.

e increased demand and the curtailment of the German
gland, like the United States, has undertaken the manu-
wool knit fabric.

are not now large, but may well increase when commerce
moves more regularly, for the United States offers a good
wool knit fabrics.

GENERAL INFORMATION.

TARIFF ACT OF OCTOBER 3, 1913.

* * knit fabrics, * * * wholly or in chief value of wool, not
ided for in this section, 35 per centum ad valorem; * * *.

DESCRIPTION.

—Jersey is a term applied to a number of knitted fabrics
tly in texture. As a rule, however, it means to the aver-
a rather finely knit fabric suitable for dresses and, in
ghts, for suits and coats. No very definite names have
given the different knit fabrics, and frequently where in

IMPORTS.

Prior to the tariff act of 1897 imports were variable, increasing and decreasing with the change in tariff rates. During the operation of the acts of 1897 and 1909, which were identical with regard to wool knit fabrics, imports were of inconsequential amounts. The act of 1913 apparently relieved the duty, but there was no adequate opportunity to observe the effects which its reduction would have in normal times. The highest valuation of wool knit fabrics imported in the 21 years 1897–1917 was $12,181 in 1920, in which year the equivalent ad valorem rate amounted to 45.13 per cent. The act of 1894 considerably reduced the duty, and by levying only an ad valorem duty made the importation of cheaper grades of fabric more profitable. The goods imported increased from 11,535 in 1895 to 1,817,943 in 1896. A comparison of values for these two years shows a smaller increase. The goods imported in 1893 had an average value of $1.36 per pound, as compared with $0.38 per pound for the imports of 1896. In the first year the duties collected amounted to 32.25 per cent of the value and in the second year to 76.09 per cent of the value. The tariffs of 1897 and 1909 which levied the same rates of duty were practically prohibitory, the total imports for the 16 years and 2 months during which these acts were in force amounting to only 162,674 pounds, valued at $183,495, while 1,817,943 pounds, valued at $623,738 were imported during the one fiscal year 1897. The revenue feature of these tariff acts is also significant; $50,642 more duty was collected in the year 1897 at a rate of 35.81 per cent than in the 16 years and 2 months at an average rate of 94.17 per cent. Imports under the act of 1913 were small, the highest value being $12,181 in 1920 and the greatest quantity 5,216 pounds in 1919. There has been no marked tendency toward increased importation. Imports in 1919 were less than one-tenth of 1 per cent of domestic production.

COMPETITIVE CONDITIONS.

One of the most important considerations in the competitive manufacture of wool knit fabrics is the availability and cost of raw material. The manufacturing cost, exclusive of material, varies considerably with the kinds of fabric. The cost of material in ordinary jersey cloth made on circular machines would be greater than the cost of labor, but where more intricate machines and more elaborate designs are employed the labor cost would be in increasing proportions. Hence any factors which increase the cost of wool add materially to the burden of the manufacturer of the cheaper grades of wool fabric. Manufacturers of such goods are probably as well equipped as makers of the same goods in foreign countries; but German manufacturers probably have some advantage in equipment for flat knitting, especially warp knitting, machines. As these have not long been built or even used in the United States, the American manufacturer installed machinery at a time of exceptionally high costs, whereas the German manufacturers bought their equipment at very much lower prices.

STATISTICAL TABLES.

BLE 1.—*Imports for consumption—Revenue—Wool knit fabrics—Total.*[1]

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
–		*Pounds.*				*Per cent.*
.....	Compound duties.	892,426	$1,196,160	$779,100	$1.34	65.13
.....	.....do.....	22,726	32,388	26,137	1.43	80.70
.....	.....do.....	11,535	15,734	12,941	1.36	82.25
.....	.....do.....	813	1,357	1,036	1.67	76.35
.....	.....do.....	1,468	1,681	1,420	1.11	87.06
.....	35 per cent or 40 per centum ad valorem.	177,749	60,441	21,386	.34	35.38
.....	.....do.....	1,066,611	405,695	146,378	.38	36.09
.....	.....do.....	1,817,943	623,738	223,401	.35	35.81
.....	Compound duties.	116,479	38,469	13,516	.33	35.13
.....	.....do.....	3,558	3,236	3,326	.91	102.78
.....	.....do.....	4,259	6,018	5,123	1.41	85.12
.....	.....do.....	5,102	6,115	5,479	1.20	89.60
.....	.....do.....	5,143	7,391	6,306	1.44	85.32
.....	.....do.....	3,214	5,091	4,176	1.58	82.03
.....	.....do.....	5,961	9,493	7,533	1.59	82.51
.....	.....do.....	10,669	13,008	11,674	1.22	89.75
.....	.....do.....	7,704	7,863	7,713	1.02	98.10
.....	.....do.....	8,301	7,643	7,791	.921	101.94
.....	.....do.....	9,787	10,216	9,898	1.04	96.89
.....	.....do.....	5,920	8,908	7,502	1.50	84.21
.....	.....do.....	16,846	17,298	16,762	1.03	96.90
.....	.....do.....	34,562	36,999	35,429	1.07	95.76
.....	.....do.....	14,363	14,857	14,412	1.03	97.00
.....	.....do.....	8,798	9,090	8,835	1.03	97.19
.....	.....do.....	8,461	9,232	8,789	1.09	95.20
.....	.....do.....	9,926	10,937	10,316	1.10	94.32
.....	35 per cent.....	3,740	3,986	1,395	1.07	35.00
.....	.....do.....	652	853	298	1.30	35.00
.....	.....do.....	266	398	139	1.49	35.00
.....	.....do.....	419	1,129	395	2.69	35.00
.....	.....do.....	3,753	11,564	4,047	3.08	35.00
.....	.....do.....	5,216	5,681	1,988	1.07	35.00
.....	.....do.....	3,833	11,194	3,917	2.92	35.00
verage..	.....	142,940	86,460	46,962	.60	54.00
ear—						
.....	.....do.....	4,123	12,181	4,263	2.95	35.00
.....	.....do.....	851	4,324	1,513	5.08	35.00
.....	35 per cent plus 45 cents per pound.	1,224	3,101	1,636	2.53	52.76
mos.)..	.....do.....	1,256	2,879	1,673	2.29	54.64

e classification after 1914.
ıly 1 to Aug. 27, 1894.
ug. 28, 1894, to June 30, 1895.
ıly 1 to July 24, 1897.
[5] From July 25, 1897, to June 30, 1898.
[6] From July 1 to Dec. 31, 1913.
[7] From Jan. 1 to June 30, 1914.
[8] Imported under the emergency tariff act of May 27, 1921.

TABLE 2.—*Imports for consumption—Revenue—Wool knit fabrics.*

VALUE NOT MORE THAN 30 CENTS PER POUND.

ear.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
.....	10 cents per pound, plus 35 per cent.	1,097	$289	$211	$0.26	72.96
.....	33 cents per pound, plus 40 per cent.	129	15	49	.12	323.80
.....	.....do.....	173	361	201	2.093	55.77
.....	.....do.....					
.....	.....do.....	6	2	3	.32	144.00
.....	.....do.....	308	77	132	.25	172.00

uly 1 to Oct. 5, 1890.
)ct. 6, 1890, to June 30, 1891.
uly 1 to Aug. 27, 1894.

...—*Imports for consumption—Revenue—Wool knit fabrics*—Continued.

MORE THAN 30 CENTS AND NOT MORE THAN 40 CENTS PER POUND.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
....	12 cents per pound, plus 35 per cent.	1,144	$394	$275	$0.34	69.85
....	38½ cents per pound, plus 40 per cent.	49	32	32	.65	99.37
....	.....do.....	10	4	6	.39	138.25
....	.....do.....	3	1	1	.40	136.00
....	.....do.....					
....	35 per cent.....	171,497	55,797	19,529	.33	35.00
....	.....do.....	901,583	318,005	111,302	.35	35.00
....	.....do.....	1,642,720	521,887	182,660	.32	35.00
....	.....do.....	114,579	37,437	13,103	.33	35.00

VALUE ABOVE 40 CENTS PER POUND.

		Pounds.				*Per cent.*
....	18 cents per pound, plus 40 per cent.	[8] 842,965	$1,117,471	$718,855	$1.33	64.33
....	44 cents per pound, plus 50 per cent.	47,042	77,959	59,678	1.66	76.55
....	.....do.....	22,543	32,023	25,930	1.42	80.97
....	.....do.....	11,532	15,733	12,940	1.36	82.25
....	.....do.....	807	1,354	1,033	1.68	76.20
....	.....do.....	1,160	1,554	1,288	1.34	82.85
....	40 per cent.....	6,252	4,644	1,857	.74	40.00
....	.....do.....	165,028	87,689	35,076	.53	40.00
....	.....do.....	175,223	101,851	40,741	.58	40.00
....	.....do.....	1,900	1,032	413	.54	40.00

1 to Oct. 5, 1890.
6, 1890, to June 30, 1891.
1 to Aug. 27, 1894.
28, 1894, to June 30, 1895.
1 to July 24, 1897.
lous classifications over 40 cents value.

ABLE 3.—*Imports for consumption—Revenue—Wool knit fabrics.*

VALUED AT NOT MORE THAN 40 CENTS PER POUND.

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
		Pounds.				*Per cent.*
.....	33 cents per pound, plus 50 per cent.	476	$185	$250	$0.389	134.92
.....	.....do.....	713	275	373	.386	135.56
.....	.....do.....	60	22	31	.138	149.09
.....	.....do.....	78	26	39	.333	146.15
.....	.....do.....	20	6	9	.313	155.68
.....	.....do.....	981	273	460	.278	168.58
.....	.....do.....					
.....	.....do.....	2	1	1	.400	133.00
.....	.....do.....	2	1	1	.364	141.00
.....	.....do.....					
.....	.....do.....	1,268	476	656	.375	137.91
.....	.....do.....	592	240	315	.406	131.40
.....	.....do.....	197	63	96	.320	153.19
.....	.....do.....	11	4	5	.348	144.75
.....	.....do.....	315	71	139	.225	196.41

1 to Dec. 31, 1913.

3.—*Imports for consumption—Revenue—Wool and manufactures—continued.*

VALUED AT MORE THAN 40 CENTS AND NOT MORE THAN 70 CENTS PER POUND.

ar.	Rate of duty.	Quantity.	Value.	Duty collected.	Value per lb. of quantity	
	44 cents per pound plus 50 per cent.	Pounds. 714	[illegible]	[illegible]	[illegible]	[illegible]
	44 cents per pound plus 50 per cent.	1,172	[illegible]	[illegible]	[illegible]	[illegible]
	....do	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	....do	945	[illegible]	[illegible]	[illegible]	[illegible]
	....do	254	[illegible]	[illegible]	[illegible]	[illegible]
	....do	1,894	[illegible]	[illegible]	[illegible]	[illegible]
	....do	41	[illegible]	[illegible]	[illegible]	[illegible]
	....do	2,265	[illegible]	[illegible]	[illegible]	[illegible]
	....do	895	[illegible]	[illegible]	[illegible]	[illegible]
	....do	47	[illegible]	[illegible]	[illegible]	[illegible]
	....do	180	[illegible]	[illegible]	[illegible]	[illegible]
	....do	1,023	[illegible]	[illegible]	[illegible]	[illegible]
	....do	1,652	[illegible]	[illegible]	[illegible]	[illegible]
	....do	1,607	[illegible]	[illegible]	[illegible]	[illegible]
	....do	370	[illegible]	[illegible]	[illegible]	[illegible]
	....do	884	[illegible]	[illegible]	[illegible]	[illegible]

VALUED AT MORE THAN 70 CENTS PER POUND.

	44 cents per pound plus 55 per cent.	Pounds. 2,[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	....do	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	....do	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	....do	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	....do	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	....do	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	....do	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	....do	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	....do	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	....do	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	....do	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	....do	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	....do	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	....do	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	....do	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	....do	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]
	....do	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]

1909 that given.
by 25, 1897 % June 30, 1898.
by 1 % June 30, 1898.
by 25, 1897 % June 30, 1898.
by 1 % June 30, 1898.

Rates of duty.

WOOL KNIT [illegible]

Tariff classification of articles.

13 [illegible] knit cloth [illegible]
[illegible] composed [illegible]
shawls, [illegible]
part of wool), [illegible]
not:

Rates of duty—Continued.

WOOL KNIT FABRICS (NOT WEARING APPAREL).

of—	Par.	Tariff classification or description.	Rate of duty.
90	392	* * * knit fabrics, and all fabrics made on knitting machines or frames, * * * made wholly or in part of wool, worsted, the hair of the camel, goat, alpaca, or other animals, not specially provided for in this act,	
		valued at not more than thirty cents per pound, the duty per pound shall be three times the duty imposed by this act on a pound of unwashed wool of the first class,[1] and in addition thereto	(Equivalent to 33 cents per pound.) 40 per cent ad valorem.
		valued at more than thirty and not more than forty cents per pound, the duty per pound shall be three and one-half times the duty imposed by this act on a pound of unwashed wool of the first class,[1] and in addition thereto	(Equivalent to 38½ cents per pound.) 40 per cent ad valorem.
		valued at above forty cents per pound, the duty per pound shall be four times the duty imposed by this act on a pound of unwashed wool of the first class,[1] and in addition thereto	(Equivalent to 44 cents per pound.) 50 per cent ad valorem.
94	281	On knit fabrics, and all fabrics made on knitting machines or frames, not including wearing apparel, * * * made wholly or in part of wool, worsted, the hair of the camel, goat, alpaca, or other animals,	
		valued at not exceeding forty cents per pound	35 per cent ad valorem.
		valued at more than forty cents per pound	40 per cent ad valorem.
97	366	On * * * knit fabrics, * * * made wholly or in part of wool, not specially provided for in this Act,	
		valued at not more than forty cents per pound, the duty per pound shall be three times the duty imposed by this Act on a pound of unwashed wool of the first class.[2]	(Equivalent to 33 cents per pound.)
		valued at above forty cents per pound and not above seventy cents per pound, the duty per pound shall be four times the duty imposed by this Act on one pound of unwashed wool of the first class,[2]	(Equivalent to 44 cents per pound.)
		and in addition thereto, upon all the foregoing	50 per cent ad valorem.
		valued at over seventy cents per pound, the duty per pound shall be four times the duty imposed by the Act on one pound of unwashed wool of the first class,[2] and	(Equivalent to 44 cents per pound.) 55 per cent ad valorem.
09	378	On * * * knit fabrics, * * * made wholly or in part of wool, not specially provided for in this section,	
		valued at not more than forty cents per pound, the duty per pound shall be three times the duty imposed by this section on a pound of unwashed wool of the first class.[3]	(Equivalent to 33 cents per pound.)
		valued at above forty cents per pound and not above seventy cents per pound, the duty per pound shall be four times the duty imposed by this section on one pound of unwashed wool of the first class.[3]	(Equivalent to 44 cents per pound.)
		and in addition thereto, upon all the foregoing	50 per cent ad valorem.
		valued at over seventy cents per pound, the duty per pound shall be four times the duty imposed by this section on one pound of unwashed wool of the first class,[3] and	(Equivalent to 44 cents per pound.) 55 per cent ad valorem.
13	288	* * * knit fabrics, * * * wholly or in chief value of wool, not specially provided for in this section.	35 per cent ad valorem.
22	1114	Knit fabrics in the piece, wholly or in chief value of wool,	
		valued at not more than $1 per pound	30 cents per pound and 40 per cent ad valorem.
		valued at more than $1 per pound	45 cents per pound and 50 per cent ad valorem.

[1] Act of 1890, par. 384. [2] Act of 1897, par. 357. [3] Act of 1909, par. 369.

WOOL HOSIERY.

SUMMARY.

The demand for wool hosiery in the United States is less stable than at for cotton or silk; consequently there is a greater element of risk its manufacture, a risk which does not bear equally upon the foreign oducer, as north European countries afford a constant market. ie manufacture of wool hosiery, seldom undertaken as an independ- t enterprise, is frequently combined with the manufacture of cotton silk hosiery or other lines of wool knit goods.

The total output of wool hosiery in the United States in 1914—240,000 dozen pairs, four-fifths of which was wool mixed—nounted to 6 per cent of all the hosiery made in the country during

·. Imports of wool hosiery in 1921, though almost 6 times rt for the first full year of record (1915), are still only about t of the quantity produced in 1919.

ool hosiery industry is old and well established in Great he large home demand and the advantages of colonial prefer- iffs giving the British manufacturer a wide market. With mportation of raw wool into the United States the American can obtain his material on an equal basis with the foreigner, though about four-fifths of the wool used in the knit-goods in the United States is of domestic origin a duty on the raw ls to increase prices and places the domestic manufacturer at ıntage.

e of wool hosiery has increased in the last few years, and the l favor with which it is received seems to assure the industry nportance in the future.

TABLE 4.—*Summary table—Wool hosiery.*

	Domestic production.	Imports for consumption.	Ratio of imports to production.	Imports for consumption.	Amount of duty.	Value per unit of quantity.	Equivalent ad valorem rate.
	Dozen pairs.	*Doz. pairs.*	*Per cent.*	*Value.*			*Per cent.*
	[1] 5,085,634	(2)					
		(2)					
		(2)					
		(2)					
	[1] 5,045,127	[3] 28,827	0.57	[3] $63,310	[3] $24,756	$2.20	39.10
		70,053		168,877	66,952	2.41	39.65
		30,610		123,662	49,178	4.10	39.77
		34,158		187,200	74,788	5.48	39.94
		[4] 418,644		[4] 2,149,660	858,904	5.13	39.96
	5,240,000	143,335	2.73	825,767	330,306	5.76	40.00
		150,584		1,200,543	478,805	7.97	39.88
—							
		380,449		3,074,113	1,225,910	8.08	39.88
		416,010		2,513,958	1,301,675	6.04	51.78
s.)		229,433		1,491,849	760,832	6.50	51.00

ıd merino (wool and cotton) hose and half hose.
ed.
1 to June 30, 1914.
ing 7,417 dozen pairs, valued at $37,557 admitted free of duty for use of the United States.

GENERAL INFORMATION.

TARIFF ACT OF OCTOBER 3, 1913.

* * * stockings, hose and half hose, made on knitting machines or ıposed wholly or in chief value of wool, not specially provided for in this per centum ad valorem; stockings, hose and half hose, selvedged, fashioned, r shaped wholly or in part by knitting machines or frames, or knit by hand, ıch as are commercially known as seamless stockings, hose and half hose, l stockings, hose and half hose * * * all of the above, composed wholly value of wool, if valued at not more than $1.20 per dozen pairs, 30 per valorem; if valued at more than $1.20 per dozen pairs, 40 per centum ad * * *.

DESCRIPTION.

he three classes of hosiery are covered by this paragraph. kings, etc., made on knitting machines or frames," is meant ry that is made by sewing together pieces cut out of long

tubular knitted webs made on large circular knitting machines. Hosiery so made is usually an inferior grade. Occasionally, when special effects, such as stripes, are desired but can not be produced on regular hosiery machines, fabric made in the piece on other machines is cut for hosiery. By "stockings, fashioned," is meant hosiery which is made by stitching together the edges of pieces specially knitted and shaped for stockings on a flat knitting machine or a succession of flat knitting machines. It is called fully fashioned because on the successive machines stitches are dropped or added as required so as to make a stocking that will conform fully to the shape of the leg and foot. By seamless hosiery is meant hosiery made on a circular knitting machine, usually completed with the exception of a short seam at the toe. Full-fashioned hosiery is more elastic and gives a neater fit than the seamless, but the seamless can be made more quickly and cheaply.[1]

The disadvantages of seamless hosiery are less apparent when wool is used than when silk or cotton is the material employed. Wool has greater natural elasticity and wool hosiery is usually ribbed, which so increases this property that even the finest grades of women's wool hose are frequently made on circular machines. Fine light-weight worsted and cashmere are more often full fashioned.

There is a straight-bed machine on which a seamless stocking partially fashioned can be knit. This machine has two straight, parallel rows of needles sufficiently near each other to connect the two rows of knitting at either end, but far enough apart to allow the fabric to pass down between them as it is knitted.[2] Production on this machine is not very rapid, because it is not fully automatic as to yarn changes. This type of machine, which is not essentially a hosiery machine, is more often employed in the manufacture of hosiery made of wool or wool mixtures than of other fibers. This may be because of the fluctuating demand for wool hosiery. Few establishments manufacturing wool goods are equipped with machines on which only hosiery can be made.

DOMESTIC PRODUCTION.

Materials.—Woolen, worsted, cashmere, and merino yarns are the chief materials used in the manufacture of wool hosiery. *Worsted* differs from *woolen* yarns by being spun with more twist from fiber which has been combed as well as carded. Combing removes the shorter fibers and places the remaining long fibers in a more nearly parallel position, producing a yarn with smoother finish. *Cashmeres* are worsted yarns with a woolen finish.[3] They have the smoothness and regularity of worsteds combined with the softness and fullness of woolens. *Merino*, a term well known in the trade, when applied to yarn or manufactures of yarn means a mixture of wool and cotton spun together in the yarn.

Besides the familiar use of cotton and wool in combination, the vogue for fancy hosiery has brought about the introduction of a silk and wool mixture which gives a pleasing effect, not only because of the difference in luster and texture of the materials, but also because of the various color combinations obtainable by dyeing the article

[1] See Survey on Cotton Hosiery for further detail as to kinds of hosiery and processes of manufacture.
[2] Metcalf, M. A.; Knitting, p. 167.
[3] Dept. of Com. Misc. Series No. 32, p. 163.

knitted. Frequently different materials are introticle by plating, a process whereby two yarns are ly in such a manner that one is constantly on the and the other on the reverse.[4] This method is red with yarns of varying quality to produce an appearance at a moderate price, as when cotton and d silk are combined, giving the outside of the garance of being all wool or all silk to a greater extent were mixed in the yarn. Such an article can be ld for much less than one of all silk or all wool. ; may be used to secure effects as well as for purposes requently silk and wool in different colors are so

used mixture of colors in the yarn and not necessarily terials, is used in wool hosiery and in cotton made to

-fifth of the raw wool used by the knit-goods industry ported. In fact, domestic knitters are not dependent for any of these materials, except of course, the raw an wool is said to have a longer, stronger fiber than but it is probable that its peculiar characteristics would ing effect in certain woven goods than in hosiery where yarn is desirable.

—The manufacture of wool hosiery does not require sentially different from that used in making cotton or act, the same machines can be used unless they are of too carry the usually bulkier wool yarn. There is probably lization of wool than of cotton and silk hose because re largely used for sports wear which admits a wider ttern and color. This variation in color, even where sed, is often obtained in dyeing the finished article and, l above, may be dependent upon the use of different that no very great changes are required in the actual cesses. According to the chemical composition the same used to give different shades or, within a limited range, ths may be used resulting in two distinct colors, one on the ther, on the silk.

tion.—The manufacture of wool hosiery is not a separate being carried on by manufacturers of other woolen knit more frequently by manufacturers of other kinds of hosiery. comparatively few mills which manufacture only wool This is very likely the result of greater fluctuations in the or wool hosiery than for that made of cotton and silk.

phical distribution.—Most of the wool hosiery is made in the States. According to the census of 1914, New Hampshire ere are many small mills led, and was followed by Pennsyld Wisconsin. Some wool hosiery is made in practically every gland and Middle Western State.

tic production and consumption.—As indicated above, the dor wool hosiery by the public in general is much more variable demand for cotton or silk. Certain classes of trade require

[4] been much discussion as to the meaning of plating. The following is from "Knitted fabrics" hamberlain and Quilter, authorities on the technique of knitting. "A plated knitted fabric may d with plated metallic goods, and should not be confounded with 'plaiting' or twisting. A ic is composed of two separate yarns one of which appears on the face of the fabric and the other ."

wool hose continually, as workmen who are exposed to the weather and golfers, but beyond these more or less staple types, fad, or fashion governs the demand. At the present time there is a revival of the use of wool hosiery both for men and for women, partly owing to the increase in out-of-door life and the consequent necessity for warmer clothing that will not hamper freedom of movement, partly to the prevalence of sport clothes for street wear, and to some extent to the fashion for wearing low shoes throughout the year.

Production figures are separately stated for wool and merino hosiery, but since one industry produces both, the sum of the two is compared with imports which include hosiery "composed wholly or in chief value of wool." All-wool and merino represented 12 per cent of the total quantity of all kinds of hosiery manufactured in the United States in 1899, 11 per cent in 1904, 8 per cent in 1909, 7 per cent in 1914, and only 6 per cent in 1919. Silk and artificial silk gain in importance at each census. The production of cotton hosiery decreased from 1914 to 1919. The combined production of all-wool and merino hosiery amounted to 5,045,127 dozen pairs in 1914 and to 5,240,000 dozen pairs in 1919, an increase of nearly 4 per cent. The ratio of all-wool to merino hosiery was as 3 to 2 in 1899, but in 1919 it was as 1 to 4. The production of all-wool hosiery has shown an actual as well as a relative decrease at each census since 1904. In merino hosiery, on the other hand, there has been an actual quantitative increase. (Table 6.)

Domestic exports.—Since domestic exports of wool hosiery are not separately stated only incomplete data can be obtained by an examination of import statistics of other countries. Exports of cotton and artificial silk hosiery are widely distributed, no one or two countries taking preponderating quantities. The same is probably true of wool hosiery, though to a somewhat less extent because of climatic limitations. Canada would seem to be our most favorable foreign market, on account of proximity and climate, but wool hosiery is the most important branch of the industry in Great Britain and British goods are accorded a preferential tariff rate in Canada. In 1918 Canada imported a total of wool hosiery valued at $913,643 of which $118,804 came from the United States; in 1920 out of a total importation valued at $1,146,065, the United States supplied $172,943.[5] The largest imports of wool hosiery into Canada from the United States were $225,777 and $327,530 in 1916 and 1917 respectively, when imports from the United Kingdom were smaller than usual. During the war some wool hosiery was sent to the United Kingdom, but the amount dwindled from 96,105 dozen pairs in 1915 to 8 dozen pairs in 1918. French statistics do not show hosiery separately, but wool knit goods other than gloves, fabrics, and ornamented articles imported into France from the United States in 1917 (the last year available), amounted to over 2 million dollars in value. This market also is probably temporary, as total imports into France of this class of goods in 1913 were valued at only a little over $240,000.

FOREIGN PRODUCTION.

The latest Canadian statistics (1919) show that the production of woolen and worsted hosiery amounted to 465,276 dozen pairs, valued

[5] Commerce Reports, Aug. 2, 1920, p. 615.

merino, 485,605 dozen pairs valued at $2,313,672
dozen pairs, valued at $5,552,221. The quantity
s almost 19 per cent less than in 1918. No other
ction statistics are available but export statistics
ducing countries are in large measure indicative
ı. England is one of the largest exporters of wool
nnually over 2 million dozen pairs, valued at about
ities exported were less in 1917 and 1918 than
ing years but this decrease was likely the result
ı the country—for example a greater demand for
strictions on exports—rather than international

e United Kingdom for 1920 were 2,706,765 dozen
ded exports for 1913; there was a falling off in
!1, but exports for the first six months of 1922 show
war basis amounting to 1,498,914 dozen pairs.
exported wool knit goods other than gloves, fabrics,
rticles to the value of 1½ million dollars, but only
ion dollars in 1917. A French official publication
ıy figures, stated that even before the war "the
ıdustry was constantly losing ground." [6] German
it garments, other than underwear, cut or shaped in
unted to about $4,000,000 in 1913. Exports of
ı Switzerland were valued at about $4,000 in 1913
),000 in 1919.[7]

IMPORTS.

wool and part wool hosiery into the United States
)53 dozen pairs, valued at $168,877 in 1915, the first
stated, and 415,900 dozen pairs valued at $2,513,958
erage unit values rose from $2.41 in 1915 to $8.08 in
these figures show an increase in the quantity im-
00 per cent, foreign goods supply but a small part
market, amounting in 1921 to only 8 per cent of
tput of 1919 and to a less percentage of the present
ıe manufacture of wool hosiery has increased since the
)wever, statistics show that the trend is toward larger
Imports in 1918 were above normal, amounting to
)airs, valued at $2,187,217.[8] The unusual quantities
; year were probably for the use of the Army and Navy.
e time, however, the use of woolen hose by women
blished fashion and this line of goods is likely to con-
ity.

PRICES.

lustries Board price bulletin on wool products gives
men's seamless wool half hose from 1913 to 1918.
lesale at $1.85 per dozen in 1913 and at $4.08, in 1918.

ır L'Industrie Française, Ministère du Commerce, 1919.
sse, periodical, March, 1920.
17 dozen pairs, valued at $37,557, were imported by the Government "free of duty."

TARIFF HISTORY.

Wool hose were not mentioned in any tariff act prior to 1913, when rates of 20, 30, and 40 per cent were levied. Under previous acts hosiery was covered by wearing apparel provisions.

The emergency tariff act of May 27, 1921, placed a compensatory duty of 45 cents a pound on all manufactures of wool. Most of the wool hosiery imported was valued at over $1.20 a pound, and therefore paid 40 per cent ad valorem plus the compensatory, which was equivalent to an addition of about 15 per cent ad valorem.

In the act of 1922, paragraph 1114, wool hosiery is divided into two value classifications. Hosiery valued at not over $1.75 per dozen pairs is dutiable at 36 cents per pound and 35 per cent ad valorem; higher priced hosiery is dutiable at 45 cents per pound and 50 per cent ad valorem.

COMPETITIVE CONDITIONS.

Domestic manufacturers, under the tariff of 1913, apparently enjoyed equal opportunity with their foreign competitors in equipment and material. About one-fifth of the wool consumed by the knit-goods industry in 1914 was imported, but this is not necessarily a disadvantage. "The market prices for the raw material (wool) in England and the United States are by virtue of the admission of American buyers into the London market and of the free import of wool into this country on practically the same basis. The American purchaser has something of an advantage in the London market by reason of the exchange situation and has been able at times to outbid his English competitor." [9]

The additional duty on raw wool and wool yarns under the emergency tariff act made the material costs of the American knit goods manufacturer somewhat greater than those of his foreign competitor. This disadvantage was offset in the domestic market by a compensatory duty on wool knit goods, but in export trade it was a definite handicap. The results of the emergency tariff on raw wool, especially of the medium and coarser grades, were not immediately apparent because they were gradual and because large stocks of these wools, which it would take a considerable period to consume, were on hand in May, 1921, when the emergency tariff act was passed.

As regards labor cost and marketing, the benefit probably lies with the European producer. Wages, however, have considerably increased in England, the chief producer of wool hosiery. European manufacturers of wool hosiery have less risk than the American as they can rely upon a steadier market for their output in north European countries, where wool hosiery is more generally and constantly worn.

Although very small amounts of wool knit goods have been imported from Germany in the past, American manufacturers anticipate competition from that source.

[9] A Survey of the British Wool Manufacturing Industry. U. S. Tariff Commission ,1920 ,p. 76.

wool hosiery according to valuations of less pairs and $1.20 or more per dozen pairs under ittle significance, as the rise in prices caused import to be thrown into the higher category. ue of imports in 1920 was $7.97. An incon- ted in the act of 1913, inasmuch as wool provided for" which is actually "cut" hosiery cent ad valorem, whereas the knit fabric from made was dutiable at 35 per cent. Even the ry provided for carried a less rate of duty (30 nit fabrics.

STATISTICAL TABLES.

uction in the United States, by States—Wool hosiery.

[From Federal Census.]

	1899		1904		1909	
	Dozen pairs.	Value.	Dozen pairs.	Value.	Dozen pairs.	Value.
.....	784,891	.....	600,706	.....	991,105	$1,589,567
.....	207,200	.....	502,226	.....	428,918	805,725
.....	124,265	.....	187,876	.....	128,894	350,835
.....	171,211	.....	164,679	.....	232,629	420,639
.....	829,095	.....	938,172	.....	446,418	1,278,461
.....	2,116,662	$4,006,216	2,393,659	$5,607,486	2,227,964	4,445,227
.....	247,937	.....	657,089	.....	503,256	590,779
.....	105,000	.....	239,162	.....	323,948	504,939
.....	160,618	.....	97,222	.....	118,604	153,666
.....	880,856	.....	1,363,819	.....	1,911,862	3,516,811
.....	1,394,411	2,044,723	2,357,292	3,396,842	2,857,670	4,766,195
.....	3,511,073	6,050,939	4,750,951	9,004,328	5,085,634	9,211,422

te.	1914		1919	
	Dozen pairs.	Value.	Dozen pairs.	Value.
.....	495,565	$785,153	152,309	$556,601
.....	413,660	708,663	63,026	339,063
.....	275,406	616,671	120,243	546,331
.....	801,202	1,764,999	710,572	3,954,875
.....	1,985,833	3,875,486	1,047,050	5,396,870
.....	1,053,502	1,399,656	1,253,977	4,243,051
.....				
.....	2,005,792	3,399,293	2,939,401	10,755,075
.....	3,059,294	4,798,949	4,193,378	14,998,126
ino.....	5,045,127	8,674,435	5,240,428	20,394,996

d.

TABLE 6.—*Production in the United States, by kinds—Wool hosiery.*

[From Federal Census.]

Kind.	1899		1904		1909	
	Dozen pairs.	Value.	Dozen pairs.	Value.	Dozen pairs.	Value.
ol hosiery:						
Hose	1,176,705	$2,267,681	1,083,783	$2,205,080	1,166,429	$2,358,106
Half-hose	939,957	1,738,535	1,309,876	3,402,406	1,061,535	2,087,121
Total	2,116,662	4,006,216	2,393,659	5,607,486	2,227,964	4,445,227
ino hosiery:						
Hose	436,891	659,959	746,226	1,182,164	834,029	1,466,283
Half-hose	957,520	1,384,764	1,611,066	2,214,678	2,023,641	3,299,912
Total	1,394,411	2,044,723	2,357,292	3,396,842	2,857,670	4,766,195
Total wool and merino	3,511,073	6,050,939	4,750,951	9,004,328	5,085,634	9,211,422

Kind.	1914		1919	
	Dozen pairs.	Value.	Dozen pairs.	Value.
ol hosiery:				
Hose	1,369,492	$2,548,047	395,000	$2,140,000
Half-hose	616,341	1,327,439	652,000	3,257,000
Total	1,985,833	3,875,486	1,047,000	5,397,000
ino hosiery:				
Hose	723,433	1,414,118	1,029,000	4,457,000
Half-hose	2,335,861	3,384,831	3,164,000	10,541,000
Total	3,059,294	4,798,949	4,193,000	14,998,000
Total wool and merino	5,045,127	8,674,435	5,240,000	20,395,000

TABLE 7.—*Imports for consumption—Revenue—Wool hosiery* [1]*—Total.*

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
al year—		*Dozen pairs.*				*Per cent.*
1914 (6 months)		28,827	$63,310	$24,756	$2.20	39.10
1915		70,053	168,877	66,952	2.41	39.65
1916		30,610	123,662	49,178	4.04	39.77
1917		34,158	187,260	74,788	5.48	39.94
1918		[2] 426,061	2,187,217	858,904	5.13	39.96
1919		143,335	825,767	330,306	5.76	40.00
1920		150,584	1,200,543	478,805	7.97	39.88
ndar year—						
1920		380,449	3,074,113	1,225,910	8.08	39.88
1921 [3]		416,010	2,513,958	1,301,675	6.04	51.78
1922 [4] (6 mos.)		229,433	1,491,849	760,832	6.50	51.00

Not separately stated prior to Jan. 1, 1914.
Including 7,417 dozen pairs valued at $37,557 admitted free of duty.
Including 305,534 dozen pairs, equivalent to 660,102 pounds, valued at $1,778,971, imported under the
rgency tariff act of May 27, 1921.
mported under the emergency tariff act of May 27, 1921. Equivalent to 530,410 pounds.

8.—*Imports for consumption—Revenue.*

HOSIERY, FASHIONED OR SEAMLESS.[1]

AT NOT MORE THAN $1.20 PER DOZEN PAIRS.

uty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
	Dozen pairs.				*Per cent.*
.....	4,608	$4,695	$1,408	$1.02	30.00
.....	4,821	4,889	1,466	1.01	30.00
.....	2,577	2,493	747	.97	30.00
.....	1,047	1,085	325	1.04	30.00
.....	[2] 2,120	[2] 2,263	365	1.07	16.13
.....	4	4	1	1.00	30.00
.....	206	239	71	1.16	30.00
.....	191	213	64	1.12	30.00
plus 45					
pound.	[4] 3,713	3,662	2,178	.99	59.48
.....	[5] 760	773	622	1.02	80.47

UED AT MORE THAN $1.20 PER DOZEN PAIRS.

t.....	23,843	$58,124	$23,249	$2.44	40.00
.....	64,774	163,438	65,375	2.52	40.00
.....	27,876	120,985	48,394	4.34	40.00
.....	33,104	186,140	74,456	5.62	40.00
.....	[6] 423,130	[2] 2,180,766	857,701	5.15	39.33
.....	143,331	825,763	330,305	5.76	40.00
.....	149,011	1,193,369	477,347	8.01	40.00
.....	375,574	3,055,331	1,222,132	8.14	40.00
.....	110,297	733,120	293,248	6.65	40.00
it plus 45					
er pound.	[8] 301,485	1,774,235	1,005,558	5.88	56.67
.....	[9] 228,475	1,490,181	759,708	6.52	50.98

WOOL HOSIERY N. S. P. F.[10]

nt.....	374	$490	$98	$1.31	20
.....	458	550	110	1.20	20
.....	157	184	36	1.17	20
.....	7	35	7	5.00	20
.....	811	4,188	837	5.16	20
.....	1,367	6,935	1,387	5.07	20
.....	4,684	18,569	3,714	3.96	20.00
.....	179	1,867	373	10.43	20.00
ent plus 45	[12] 336	1,074	317	3.20	29.52
per pound.					
.....	[12] 198	895	502	4.52	56.09

ior to Jan. 1, 1914.
airs valued at $1,044 imported free of duty.
ergency tariff act of May 27, 1921.
nds.
ds.
airs valued at $36,513 imported free of duty.
ergency tariff act of May 27, 1921.
ounds.
ounds.
prior to Jan. 1, 1914.
nergency tariff act of May 27, 1921.
nds.
nds.

TABLE 9.—*Wholesale prices—Wool hosiery.*

[From War Industries Board. Price Bulletin No. 24.]

HALF HOSE, MEN'S SEAMLESS.

	Per dozen.
1913	$1.8500
1914	1.8500
1915	1.8833
1916	1.9500
1917	2.9167
1918	4.0792

Rates of duty—Wool hosiery.

Act of—	Par.	Tariff classification or description.	Rate of duty.
1913	288	* * * stockings, hose and half hose, made on knitting machines or frames, composed wholly or in chief value of wool, not specially provided for in this section.	20 per cent ad valorem.
		Stockings, hose and half hose, selvedged, fashioned, narrowed, or shaped wholly or in part by knitting machines or frames, or knit by hand, including such as are commercially known as seamless stockings, hose and half hose, and clocked stockings, hose and half hose * * * composed wholly or in chief value of wool, if valued at not more than $1.20 per dozen pairs, if	30 per cent ad valorem.
		valued at more than $1.20 per dozen pairs	40 per cent ad valorem.
1922	1114	* * * Hose and half hose, * * * , wholly or in chief value of wool, valued at not more than $1.75 per dozen pairs,	36 cents per pound and 35 per centum ad valorem.
		valued at more than $1.75 per dozen pairs	45 cents per pound and 50 per cent ad valorem. * * *

COURT AND TREASURY DECISIONS.

Knit woolen hosiery was held dutiable under paragraph 396 of the act of 1890 as wool wearing apparel, and not under paragraph 392 as knit fabrics or fabrics made on knitting machines or frames. (Arnold *v.* United States, 147 U. S., 494.)

The provision in paragraph 285 of the act of 1894 for knit wearing apparel was held more specific than knit fabrics in the act of 1890 or knit goods in the act of 1883 and woolen hosiery was, accordingly, classified under the act of 1894 as knit wearing apparel. (G. A. 3302, T. D. 16657.)

Knitted wool leggings, found to be dealt in the trade as footless golf hose, were held properly classified under the hosiery provision of paragraph 288 of the act of 1913. (Abstract 43007, of 1919.) The court can not take judicial notice that exhibits of wool half hose are not "selvedged, fashioned, narrowed, or shaped wholly or in part by knitting machines or frames, or knit by hand," or "commercially known as seamless," and in the absence of other evidence the collector's classification of them as such under paragraph 288 of the act of 1913 was sustained, overruling the claim that they were dutiable as knit woolen half hose under the same paragraph. (United States *v.* Lee, 9 Ct. Cust. Appls., 111, of 1919.)

Wool hose, clocked, was held dutiable under paragraph 288 of the act of 1913. (Abstract 44468, of 1921.)

WOOL GLOVES AND MITTENS.

General Information.

TARIFF ACT OF OCTOBER 3, 1913.

* * * gloves and mittens, all of the above, composed wholly or in of wool, if valued at not more than $1.20 per dozen pairs, 30 per centum if valued at more than $1.20 per dozen pairs, 40 per centum ad va- * *

DESCRIPTION.

n is a covering for the hand with one sheath for the thumb er for the other four fingers. A glove differs from a mitten ; a separate sheath for each finger. Gloves and mittens ee types, according to method of manufacture: (1) Seam- continuously so that no seams are required in finishing; ned or wrought, knit flat to shape with selvedged edges afterwards sewn together; (3) "cut," made from knitted iout any shape being given in the knitting. Mittens as a eamless; gloves are of all three types.

oves are worn principally for warmth, but for sports wear ped in attractive designs which change from season to fleece-lined cotton gloves and possibly cheap grades of offer some competition to the wool knit glove industry.

DOMESTIC PRODUCTION.

ls.—Wool, worsted, and merino yarn, described in the on wool hosiery, are used in the manufacture of gloves ns.

ent and methods of production.—In the manufacture of mittens cut and sewed to shape ordinary circular or flat are used for making the cloth from which they are cut by the manufacture of gloves from a continuous yarn no machinery is available. One of the best authorities on les of knitting describes the processes as follows: [1]

e consists of three main parts, viz, (1) the cuff or top, nd, (3) the fingers and thumb. *Seamless* gloves are pro- ckly in large numbers by making the rib top and plain matically on a circular rib machine of the superimposed pe, but the fingering has to be effected one finger at a and flat knitting machines, and is a very slow process. oves have all the parts made selvedged to shape on straight ed needle machines, the selvedged edges being finally a cup seaming machine."

tion.—Like wool hosiery, the manufacture of wool gloves is does not represent a specialized branch of the industry. to the Directory of the Knitting Trade it is carried on by concerns which vary from small establishments equipped han a dozen machines to large organizations capitalized to a million dollars, but in almost every instance other goods than gloves are manufactured.

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and Quilter; Knitted Fabrics, London.

Geographical distribution.—Practically all the wool-glove manufac-
re is located in the Northeast and Middle West. There are more
ncerns in New York than in any other one State, but there are many
d some of the largest in Michigan and Wisconsin.

Domestic production.—The production of wool gloves and mittens
given separately for the first time in 1919, so that it is difficult to
termine the development of the industry. In 1919 the total out-
t of wool gloves and mittens in the United States amounted to
9,984 dozen pairs, valued at $1,235,140.

FOREIGN PRODUCTION.

Great Britain is one of the most important countries in the manu-
cture of all kinds of wool knit goods, the industry centering around
icester, England, and Harwick and Glasgow, Scotland. Gloves
e not separately stated in British statistics, but exports of wool knit
ods other than hosiery amounted to almost $5,000,000 in 1913 and
,500,000 in 1918. Exports of wool gloves from Germany in 1913
nounted to a value of about $700,000, and from France to a value
about $19,000.

IMPORTS.

Imports were not given separately until the second half of the
cal year 1914, when they amounted to 26,127 dozen pairs, valued at
0,343. The largest recorded imports were 204,554 dozen pairs,
lued at $1,492,352, in 1918, the average unit value equaling $7.30.
The average unit value fell to $2.50 for 1921 and to $1.91 for the
st three months of 1922. Imports in 1921 amounted to 121,395
zen pairs, valued at $303,143.

Because of the low unit value of the gloves imported during the
st quarter of 1922, the specific compensatory duty of 45 cents per
und under the emergency tariff act raised the equivalent ad valo-
m duty on the gloves imported during that period by 25 per cent.
Imports come chiefly from the United Kingdom and Germany.

TARIFF HISTORY AND TARIFF CONSIDERATIONS.

Wool gloves and mittens were not specially mentioned in any
riff act prior to 1913, when they were provided for under two
ssifications, those valued at not more than $1.20 per dozen pairs
30 per cent ad valorem, and those valued at more than $1.20 per
zen pairs at 40 per cent. This paragraph (288) provided a less rate
duty (30 per cent) on gloves of the first-named class than on the
it fabric from which they might be made (35 per cent).

Under the emergency tariff act, wool gloves and mittens were sub-
ct to the same compensatory duty as other manufactures of wool,
z, 45 cents per pound.

In the act of 1922, wool gloves and mittens are provided for in
ragraph 1114 under two classifications, those valued at not more
an $1.75 per dozen pairs paying 36 cents a pound and 35 per cent
valorem, and those valued at over $1.75 per dozen pairs paying
cents a pound and 50 per cent ad valorem.

STATISTICAL TABLES.

nsumption—Revenue—Wool gloves and mittens [1]*—Total.*

ty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
	Dozen pairs.				*Per cent.*
.....	26,127	$40,343	$14,888	$1.54	36.90
.....	148,377	218,194	78,739	1.47	36.09
.....	30,656	55,794	20,544	1.82	36.82
.....	13,685	37,909	14,991	2.77	39.55
.....	204,554	1,492,352	596,905	7.30	40
.....	66,094	597,316	238,916	9.04	40
.....	20,620	95,191	38,059	4.62	39.98
.....	48,221	273,286	109,298	5.67	39.99
.....	[2] 121,395	303,143	167,756	2.50	55.34
.....	[3] 52,215	100,541	58,761	1.93	58.44

r to Jan. 1, 1914.
, equivalent to 105,131 pounds, valued at $226,949, imported under emergency
y tariff act, equivalent to 52,382 pounds.

orts for consumption—Revenue—Gloves and wool mittens.

) AT NOT MORE THAN $1.20 PER DOZEN PAIRS.[1]

of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
	Dozen pairs.				*Per cent.*
cent.....	11,808	$12,491	$3,747	$1.06	30
.....	79,384	85,388	25,616	1.08	30
.....	15,094	17,736	5,320	1.17	30
.....	1,557	1,730	519	1.11	30
.....	312	360	108	1.15	30
.....	101	170	32	1.06	30
.....	163	170	51	1.04	30
.....	165	165	50	1.00	30
r cent plus 45 its per pound.	[3] 9,632	8,098	5,626	.84	69.48
lo.....	[4] 14,455	12,925	8,729	.89	67.54

ALUED AT MORE THAN $1.20 PER DOZEN PAIRS.[1]

per cent.....	14,318	$27,851	$11,140	$1.94	40
.do.....	68,993	132,806	53,122	1.92	40
.do.....	15,562	38,058	15,223	2.44	40
.do.....	12,128	36,179	14,471	2.98	40
.do.....	204,242	1,491,992	596,796	7.30	40
..do.....	65,993	597,209	238,884	9.05	40
..do.....	20,455	95,021	38,008	4.64	40
..do.....	48,056	273,121	109,248	5.68	40
..do.....	23,691	76,194	30,478	3.22	40
per cent plus — per pound.	[5] 88,072	218,851	131,653	2.48	60.16
...do.....	[6] 37,760	87,616	50,032	2.32	57.10

ted prior to Jan. 1, 1914.
mergency tariff act of May 27, 1921.
4 pounds.
5 pounds.
027 pounds.
037 pounds.

Rates of duty—Wool gloves and mittens.[1]

Act of—	Par.	Tariff classification or description.	Rate of duty.
1913	288	* * * gloves and mittens * * * composed wholly or in chief value of wool,	
		if valued at not more than $1.20 per dozen pairs	30 per cent ad valorem.
		if valued at more than $1.20 per dozen pairs	40 per cent ad valorem.
1922	1114	* * * gloves and mittens, wholly or in chief value of wool, valued at not more than $1.75 per dozen pairs	36 cents per pound and 35 per cent ad valorem.
		valued at more than $1.75 per dozen pairs	45 cents per pound and 50 per cent ad valorem.

[1] Not specially enumerated prior to 1913.

COURT AND TREASURY DECISIONS.

Under the act of 1883 cashmere gloves made from wool knit goods upon frames or cut into shape and sewed together, were held to be dutiable as knit goods under paragraph 363 at 35 cents per pound and 40 per cent ad valorem, and not as wearing apparel other than knit goods at 35 per cent ad valorem under paragraph 366 of that act. (G. A. 56, T. D. 10335, of 1890.)

Under the act of 1894 men's cashmere gloves, not knit into form but cut and fashioned from a knit fabric similar to Jersey cloth, were held dutiable as knit wearing apparel under paragraph 285 rather than as wool wearing apparel under paragraph 284 of that act. The court said the term "knit wearing apparel" in paragraph 285 was not limited in its application to articles fashioned in the process of knitting, but included all articles of wearing apparel made of a knitted and not of a woven fabric. (G. A. 3255, T. D. 16537, of 1895.)

WOOL KNITTED ARTICLES.

GENERAL INFORMATION.

TARIFF ACT OF OCTOBER 3, 1913.

*, and knitted articles of every description made up or manufactured
t, and not specially provided for in this section, composed wholly or
wool, 35 per centum ad valorem.

DESCRIPTION.

ed articles provided for in paragraph 291 of the 1913
luded all wool knit goods except knit fabrics, hosiery,
which were enumerated in paragraph 288, and shawls,
ıentioned in paragraph 291 but statistics for which have
ed with woven shawls. This description would there-
l other wool knit wearing apparel which comprises two
ches of the knit goods industry, viz, the manufacture of
nd the manufacture of outerwear or fancy knit goods,
ıters, toques, scarfs, and bathing suits.

DOMESTIC PRODUCTION.

—The description of materials used for wool hosiery and
, fabrics applies also to these branches of the industry.
yarn used in this fancy knit goods industry ranges in
3's to 2/80; the wool from 8's to 2/23, and the merino
/23. Besides these yarns there is a considerable amount
eaver, and llama hair used.
.—Most of the underwear made in the United States is
tubular fabric knit on circular machines—that of fine
spring-beard machines, and the coarse, on latch-needle
Practically all machinery of this character is made in
States and some of the most important developments,
stop motion which automatically ceases the operation of
after yarn breakage, are products of American ingenuity.
ımber of foreign-built machines, however, are used in the
ıdustry. Domestic builders supply most of the circular
ıt the flat machines probably to the extent of 80 per cent
d. The reasons given for the more extensive use of
machines are that they permit a wider variety of pro-
l in general stand service better than the American
Germany and England are the most important builders
y of this type and manufacturers of fancy knit goods,
Germany, probably have some advantage in obtaining

ısion of the industry in the United States since 1914 has
approximately a 50 per cent increase in the use of circular
d a 25 per cent increase in the use of flat machines. This
ıvolved a much heavier expenditure for plant construc-
uipment than would have been necessary in 1914. It is
ıat the average increase in the cost of knitting machinery
o 1920 was 150 per cent. New equipment in this line is
mous with better machinery, for there have been no
ıts of importance since 1914 except the three-thread

atic striper on circular machines, which increases output and s labor costs, but the application of which is of course limited. uipment of German mills, even if not replaced since 1914, will out of date.

hods of production.—In the underwear industry the methods duction are similar to those employed in the manufacture ton underwear discussed in the survey on paragraph 261 tariff act of 1913. In the manufacture of outerwear and knit goods, standardization is extremely difficult because variety of the product and the change in style from season son. This, of course, limits the use of fully automatic nery. The skill of the knitter plays an important part in ish and appearance of the garment and, generally speaking, epresents a larger proportion of the total cost in this branch industry. The greater part of the machines in use are power , but some small concerns still use hand machines on which a of articles may be made. Where the machines are large and te and the work heavy, the knitters are usually men, but female s well adapted to knitting and the number of women in this tion is increasing. In the Cleveland district about 75 per cent machinery in the fancy knit goods industry is run by men and cent by women. In the East men operate about 90 per cent full-fashion machines but only about 50 per cent of the circular nes, but as only about 15 per cent of the industry is full- ned, the remaining 85 per cent, comprising articles cut from usually knitted on circular machines, the proportion of women industry as a whole more nearly approaches the ratio given cular machines than that for full-fashion machines. Women n most of the finishing operations which usually involve the use e form of sewing machines. All of the processes require from months to a year for the worker to become skilled. The Na- Association of the Sweater and Knitted Textile Industry esti- the proportion of direct labor in the manufacture of sweaters per cent in 1914 and 37.2 in 1920.

nization.—Although a few very large mills are engaged in the g of outerwear and fancy knit goods, there are a great number of concerns in the industry, a fact explained by the National ation of the Sweater and Knitted Textile Industry [1] as follows:

> nitted outerwear industry in the beginning was confined to a large extent to types of garments, which were very readily made on simple equipment; he ease with which a skilled knitter could enter the business by buying a achine or two, plus sewing machines, and become what is known in the trade as a "kitchen knitter." However, as the business has developed in extent iety, the proportion of small plants is constantly decreasing, owing to the ncreased capital investment necessary as well as the greatly increased working required to produce the trade requirements in knitted outerwear. When a oncern has made any appreciable success it has come through specializing on a very small assortment and making quick turnovers. Frequently no osts are ascertained, hence the large proportion of failures among this group of cturers, especially in times of even moderate recessions in demand.

raphical distribution.—The wool underwear industry is pretty ntralized in New York State, especially at Cohoes, and in New nd. The outerwear and fancy knit goods industry is probably ost widely distributed branch being practically the only one many mills in the far Western States. The principal centers,

[1] e National Knitted Outerwear Association.

Brooklyn, New York City, Cleveland, Philadelphia, and

l value of production.—In 1914 the domestic production of
derwear amounted to 373,045 dozen shirts and drawers,
,448,575, and 147,221 dozen combination suits, valued
5; merino underwear amounted to 1,434,504 dozen
rawers, valued at $9,228,686, and 486,128 dozen com-
s, valued at $5,706,102, making a total valuation of
for wool and part wool underwear produced in 1914.
nted an increase in the production of all-wool under-
per cent over 1909 and a decrease of 30 per cent in
rwear.

ction of outerwear and fancy knit goods is not given
s reports by materials of which composed, and in fact
itself is not so divided. Many articles are composed
vool or of either of these materials and cotton, or gar-
ferent fibers are produced simultaneously in a mill so
tput of any one kind is not recorded separately. In
sus shows a production of all descriptions of "sweaters,
kets, etc." amounting to 2,249,142 dozen, valued at
This is an increase of 1.25 per cent in quantity and
nt in value over 1909; but the increase from 1904 to
uch more marked, amounting to 173.70 per cent in
l 168.78 per cent in value.

ipal items listed in the census which would fall under
ation are (1) cardigan jackets, sweaters, etc., (2)
s, etc., (3) other fancy knit goods, (4) bathing suits,
The total value of these classifications amounted to
in 1914, which was an increase of 24.66 per cent over
on of similar items in 1909. The census of 1914 gives
silk knit articles corresponding to these classifications
nted to $1,182,510. Deducting this from the above
ue of $34,013,638 for the production of these articles
l and cotton. It is impossible to ascertain the propor-
of these materials, but considering the nature of the
robable that by far the larger part of the value repre-
nit articles.

FOREIGN PRODUCTION.

ain has long been considered the most important pro-
l knit goods, but although no authoritative statistics of
re available, it is somewhat doubtful whether or not the
n the cotton knit goods industry in England will not have
fect upon the manufacture of wool knit goods. Some mills
rly made wool goods may now be devoted to cotton
ster in England and Glasgow and Harwick in Scotland,
l remain important centers of the wool knit goods indus-
ny is probably not far behind Great Britain in normal
oducer of wool knit goods, as her exports of such articles
ible. Switzerland during the war obtained some portion
n trade, in fact it is said that a large part of the expan-
wiss industry is the result of the removal of German con-
ntral territory. French manufacturers have more consist-
l their efforts to the development of silk knit goods, so

TABLE 13.—*Production in United States—Wool knit underwear.*

[From Federal Census.]

Article.	1899		1904		1909	
	Quantity.	Value.	Quantity.	Value.	Quantity.	Value.
and drawers:	*Dozens.*		*Dozens.*		*Dozens.*	
l wool	1,085,046	$4,980,818	485,328	$3,647,934	178,163	$1,820,521
erino	2,675,416	13,293,829	2,113,810	13,031,754	2,536,473	17,055,624
Total	3,760,462	18,274,647	2,599,138	16,679,688	2,714,636	18,876,145
nation suits:						
l wool	9,501	201,667	68,067	965,132	50,102	683,289
erino	139,994	1,133,328	105,242	1,199,949	364,387	4,217,432
Total	149,495	1,334,995	173,309	2,165,081	414,489	4,900,721
Grand total	3,909,957	19,609,642	2,772,447	18,844,769	3,129,125	23,776,866

Article.	1914		1919	
	Quantity.	Value.	Quantity.	Value.
and drawers:	*Dozens.*		*Dozens.*	
l wool	373,045	$3,448,575	323,000	$3,158,000
erino	1,434,504	9,228,686	1,841,000	19,509,000
Total	1,807,549	12,677,261	2,164,000	22,677,000
nation suits:				
l wool	147,221	2,490,815	77,000	2,003,000
erino	486,128	5,706,102	1,134,000	21,416,000
Total	633,349	8,196,917	1,211,000	23,419,000
Grand total	2,440,898	20,874,178	3,375,000	46,096,000

BLE 14.—*Imports for consumption—Revenue—Wool knitted articles, n. s. p. f.*[1]

	Rate of duty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
year—		*Pounds.*				*Per cent.*
92	49½ cents per pound and 60 per cent.	810,720	$1,214,712	$1,130,133	$1.48	93.04
93	do	992,221	1,440,688	1,355,562	1.45	94.09
94	do	687,374	987,588	932,803	1.44	94.45
95	do	310,293	401,351	394,406	1.29	98.27
95	50 per cent	332,913	414,972	207,486	1.25	50.00
96	do		2,052,732	1,026,366		50.00
97	do		2,031,672	1,015,836		50.00
98	do		126,389	63,194		50.00
98	44 cents per pound and 60 per cent.	195,391	282,482	255,464	1.45	90.44
99	do	503,783	656,834	615,764	1.30	94.89
00	do	411,633	541,982	506,308	1.32	93.42
01	do	429,263	617,784	559,546	1.44	90.57
02	do	559,904	791,365	721,177	1.42	91.13
03	do	794,543	1,146,996	1,037,796	1.44	90.48
04	do	497,039	715,742	648,142	1.44	90.56
05	do	413,557	538,532	505,084	1.30	93.80
06	do	473,337	602,769	569,929	1.27	94.55
07	do	451,379	617,268	568,967	1.37	92.17
08	do	286,188	393,395	361,959	1.37	92.01
09	do	309,678	381,104	364,921	1.23	95.75
10	do	296,332	354,283	338,556	1.24	95.56
11	do	272,808	367,708	340,660	1.35	92.64
12	do	293,478	391,923	364,284	1.34	92.95
13	do	364,306	487,284	452,665	1.34	92.90
14	do	215,487	301,339	275,618	1.40	91.46
14	35 per cent		114,434	40,052		35.00

cludes wool hosiery and gloves prior to Jan. 1, 1914.

nsumption—Revenue—Wool knitted articles, n. s. p. f.—Con.

luty.	Quantity.	Value.	Duty collected.	Value per unit of quantity.	Actual and computed ad valorem rate.
	Pounds.				*Per cent.*
		$136,059	$47,620		35.00
		91,684	32,089		35.00
		191,033	66,861		35.00
		570,783	199,771		35.00
		298,565	104,497		35.00
		141,440	49,502		35.00
		215,094	75,282		35.00
		117,323	41,063		35.00
ent and nts per	11,377	43,976	20,511	$3.87	46.64
	8,10	27,668	13,333	3.41	48.19

y tariff act of May 27, 1921.

.—Exports of wool knit goods, by months, 1922.[1]

Month.	Quantity.	Value.
	Pounds.	
	5,296	$11,772
	10,282	20,576
	12,846	15,818
	4,963	13,153
	16,055	20,081
	5,794	10,413
	55,236	91,762

rior to January, 1922.

ates of duty—Wool knitted articles, n. s. p. f.[1]

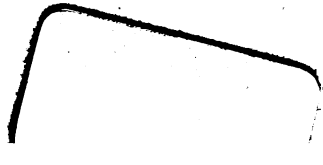
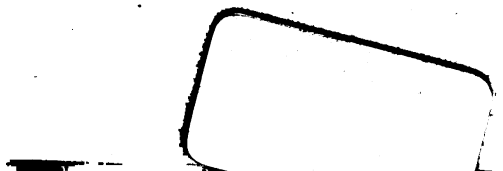
Tariff classification or description.	Rate of duty.
lit wearing apparel, composed wholly or in part worsted, the hair of the camel, goat, alpaca, or other , made up or manufactured wholly or in part,	50 per cent ad valorem.
nitted articles of every description, made up or ctured wholly or in part, * * * composed wholly or of wool, the duty per pound shall be four times the duty d by this Act on 1 pound of unwashed wool of the first	(Equivalent to 44 cents per pound.)
n addition thereto	60 per cent ad valorem.
nd knitted articles of every description made up or ictured wholly or in part, * * * and not specially ed for in this section, composed wholly or in part of wool, ty per pound shall be four times the duty imposed by tion on 1 pound of unwashed wool of the first class,[2]	(Equivalent to 44 cents per pound.)
n addition thereto	60 per cent ad valorem.
knitted articles of every description made up or actured wholly or in part, and not specially provided for section, composed wholly or in chief value of wool.	35 per cent ad valorem.
Knit underwear, finished or unfinished, wholly or in value of wool,	
ued at not more than $1.75 per pound	36 cents per pound and 30 per cent ad valorem.
ued at more than $1.75 per pound	45 cents per pound and 50 per cent ad valorem.
ear and other articles, knit or crocheted, finished or un- ed, wholly or in chief value of wool, and not specially ded for,	
ued at not more than $1 per pound	36 cents per pound and 40 per cent ad valorem.
ued at more than $1 and not more than $2 per pound	40 cents per pound and 45 per cent ad valorem.
ued at more than $2 per pound	45 cents per pound and 50 per cent ad valorem.

Act of 1897, par. 357. [2] Act of 1909, par. 369.

Court and Treasury Decisions.

Wool wearing apparel in part of braid, ornaments, or trimmings, have been held more specifically provided for as wool wearing apparel under this paragraph than as articles in part of braid, etc., under paragraph 358 as follows: Coats, vests, trousers, etc., in part of braid (G. A. 7597, T. D. 34755, of 1914; Abstract 37356, of 1915; and Abstract 38912, of 1915); and women's jackets and other wearing apparel (Abstract 38636 and 38718, of 1915); knitted wool caps, ornamented with rosettes composed of silk ribbon (T. D. 34985, of 1914); woolen costumes, in part of braid or silk and fur trimming (Abstract 37223, of 1915); women's jackets (Abstract 38636, of 1915); fringed hoods (Abstract 38922, of 1915); shawls, knitted or woven of wool and not made in imitation of lace (Abstract 45010, of 1922). These rulings are in accordance with the principle laid down in United States *v.* Snows U. S. Sample Exp. Co. (6 Ct. Cust. Appls., 120, of 1915) relative to shirt bosoms of tucked cotton material.

Slippers, where the cattle-hair and wool components together would be of greater value than the leather component, are not to be classified as wool chief value by treating the cattle hair as wool by construction and adding it to the wool component, but the three single components must be separated. The articles were held classable as in chief value of leather. (G. A. 7939, T. D. 36582, of 1916.) Slippers containing wool not exceeding 2 per cent (Abstract 30702, T. D. 33018, of 1912).

Under the act of 1909 the following articles were held dutiable as ready-made clothing or wearing apparel, including shawls, wholly or in part of wool: Cosmanos, consisting of small head shawls, composed entirely of wool (Abstract 37618, of 1915); hair rolls or "rats" in part of wool (G. A. 7173, T. D. 31315, of 1911); Russian tunics composed of cotton and trimmed with wool (Abstract 31178, T. D. 33145, of 1913); silk hats in part of wool (T. D. 33008, of 1912; G. A. 7578, T. D. 34600, of 1914); boys' suits in chief value of cotton and in part of wool (5 Ct. Cust. Appls., 261, of 1914).

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